# QMS® 4060 Print System Reference

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# 1

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# Introduction

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## In This Chapter . . .

- "About This Manual" on page 1-2
- "Typographic Conventions" on page 1-3

# Introduction

This manual provides detailed instructions and technical information for your QMS 4060 Print System. Use this guide in conjunction with your other printer documentation.

This chapter gives you a brief overview of this manual.

# About This Manual

The information in this manual is divided into the following sections:

■ **Chapter 1—Introduction**

Provides an overview of the manual.

■ **Chapter 2—Print Media**

Lists print media sizes, margins, and imageable areas and provides media storage information.

■ **Chapter 3—Professional Printing**

Discusses typefaces and fonts, typographic terms, displays the printer's typefaces, and provides some page design tips.

■ **Chapter 4—Printer Configuration**

Explains the methods of configuring the printer, demonstrates how to use printer control panel, and provides a detailed discussion of the configuration menu.

■ **Chapter 5—Additional Technical Information**

Defines ESP and SIO, communication modes, halftones, and memory. Discusses end job mode, IEEE 1284 bidirectional parallel interface modes, PS Protocol and HP-GL color encoding.

■ **Appendix A—QMS Customer Support**

Provides world-wide product sales and support telephone numbers and describes how to communicate with QMS through CompuServe, the Internet, and Q-FAX.

■ **Appendix B—Technical Specifications**

Provides technical specifications for the printer and lists available supplies and replacement parts.

■ **Appendix C—Document Option Commands**

Lists printer-supported Document Option Commands (DOCs).

■ **Appendix D—Notices**

Lists manual and legal notices.

■ **Appendix E—Configuration Menu**

Provides a view of the printer's configuration menu.

## Typographic Conventions

The following typographic conventions are used in this manual:

| | |
|---|---|
| `Mixed-Case Courier` | Text you type, and messages and information displayed on the screen |
| `Mixed-Case Italic Courier` | Variable text you type; replace the italicized word(s) with information specific to your printer or computer |
| `UPPERCASE COURIER` | Information displayed in the printer message window |
| **lowercase bold** | PostScript operators and DOS commands |
| *lowercase italic* | Variable information in text |
| UPPERCASE | File and utility names |
| ↵ | Press the Enter key (PC) or Return key (Macintosh) |

^                                    Press and hold down the Ctrl key (PC)

                                     In Adobe Acrobat PDF versions of the manual, click to play a QuickTime video clip of the procedure described in the text.

» **Note:** *Notes contain tips, extra information, or important information that deserves emphasis or reiteration.*

▲ **Caution:** *Cautions present information that you need to know to avoid equipment damage, process failure, or extreme annoyance.*

**WARNING!** *Warnings indicate the possibility of personal injury if a specific procedure is not performed exactly as described in the manual.*

*ACHTUNG! Bitte halten Sie sich exakt an die im Handbuch beschriebene Vorgenhensweise, da sonst Verletzungsgefahr bestehen könnte.*

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# 2

## Print Media

## In This Chapter . . .

- "Media Sizes and Imageable Areas" on page 2-2
- "Media Types and Weights" on page 2-4
- "Media Storage" on page 2-5

# Introduction

This chapter lists the media sizes and imageable areas supported by the QMS 4060 Print System, and then provides information on selecting and storing media.

# Media Sizes and Imageable Areas

Your printer supports media in a number of sizes. Each media size has a certain imageable area, the maximum area on which the printer can print. This area is subject to both hardware limits (the physical media size and the margins required by the printer) and software constraints (the amount of memory available for the full-page frame buffer).

» **Note:** *Ensure that the media size matches the tray size (for example, letter/A4 media must be loaded only when the tray is set to letter/A4 size). Since the media tray sends a media size signal to the printer controller, using a wrong size media will cause your image to be positioned incorrectly on the page or clipped and can result in paper jams.*

## Imageable Area

The imageable area is the area on which the printer is guaranteed to print clearly and without distortion. This area is subject to both hardware limits (the physical media size and the margins required by the printer) and software constraints (the amount of memory available for the full-page frame buffer).

The following table lists the size, imageable area, and feed edge (the edge of the media drawn into the printer first) of all supported media as well as information about their input, output, and finishing options:

| Media | Media Size | | Imageable Area | | Feed | Input/ |
|---|---|---|---|---|---|---|
| | Inches | Millimeters | Inches | Millimeters | Edge | Output |
| 11x17 | 11.00x17.00 | 279.4x431.8 | 10.67x16.67 | 270.93x423.38 | Short | D, L, M, P, U |
| A3<br>A4<br>A5 | 11.69x16.54<br>11.69x8.27<br>5.85x8.27 | 297.0x420.0<br>297.0x210.0<br>148x210.0 | 11.35x16.20<br>7.93x11.35<br>5.48x7.94 | 288.21x411.48<br>201.51x288.21<br>139.12x201.55 | Short<br>Long<br>Short | D, L, M, P, U,<br>D, F, L, M, U<br>P D, D, L, M<br>U, P |
| B4 (JIS)<br>B5 (JIS) | 10.12x14.33<br>7.17x10.12 | 257.0x364.0<br>182.0x257.0 | 9.77x13.998<br>6.87x9.78 | 248.24x355.56<br>173.40x248.50 | Short<br>Short | D, L, M, P, U<br>D, L, M, P, U |
| B4 (ISO)<br>B5 (ISO) | 9.84x13.90<br>6.93x9.84 | 250x353<br>176x250 | 9.50x13.57<br>6.59x9.51 | 241.47x344.55<br>167.30x241.55 | Short<br>Short | C, D, P,<br>C, D, P |
| Executive | 7.25x10.50 | 184.20x266.70 | 6.92x10.20 | 175.73x259.13 | Short | D, M, P |
| Legal<br>Letter | 8.5x14.0<br>11.00x8.5 | 215.9x355.6<br>279.40x215.90 | 8.16x13.67<br>8.17x10.67 | 207.26x347.18<br>207.48x270.93 | Short<br>Long | D, L, M, P, U<br>D, F, L, M, P<br>U |
| Statement | 5.50x8.50 | 139.7x215.9 | 5.16x8.17 | 131.06x207.48 | Short | C, D, P |
| *D=Duplexer, F=Large-Capacity Input Feeder, L=Lower tray, M=Middle tray, U=Upper tray,<br>  P=Large-Capacity Output Stacker, C=Custom tray | | | | | | |

## Working Within the Imageable Area

The imageable areas for print media on your QMS 4060 Print System may vary $1/16$" (1.6 mm). This is normal mechanical engine alignment tolerances. You can adjust the alignment of the image in several different ways:

■ Adjust the margins or page size through your application.

■ Use the printer's control panel (Administration/Engine/Image Alignment menu).

■ Use the PostScript **translate** and **scale** operators to reduce image size and change its placement on the page.

## Page Margins

Margins are set through your application. Some applications allow
you to set custom page sizes and margins while others have only
standard page sizes and margins from which to choose. If you choose
a standard format, you may lose part of your image (due to imageable
area constraints). If you can custom-size your page, use those sizes
given for the imageable area for optimum results.

# Media Types and Weights

Your printer supports envelopes, labels, paper, postcards, and trans-
parencies in a number of sizes. The following information provides
media types and weights that your printer supports.

## Labels

### Type

See appendix B, "Technical Specifications," for information on typical
types of labels.

### Weight

The printer supports 31-36 lb (120-139 g/m$^2$) labels.

## Paper

### Type

Use paper recommended for laser printers, such as Hammermill
Laser Print. See appendix B, "Technical Specifications," for informa-
tion on typical types of paper.

### Weight

The printer supports the following weights of paper:

- **Paper trays**—17-36 lb (64-139 g/m$^2$)
- **Large-Capacity Input Feeder**—17-36 lb (64-139 g/m$^2$)

## Transparencies

### Type

See appendix B, "Technical Specifications," for information on typical types of transparencies.

### Heat Tolerance

The printer supports transparencies able to withstand the heat generated by the fuser (190° C/374° F), without transformation.

# Media Storage

Improperly stored media increases the chance of paper jams during printing and can drastically affect the print quality of the printed page. Keep media in good condition by storing it

- In its wrapper
- On a flat surface
- In a closed cabinet
- In a cool, dry area

See appendix B, "Technical Specifications," for information on storage conditions for media.

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# 3

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# Professional Printing

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## In This Chapter . . .

- ■ "About Typefaces and Fonts" on page 3-2
- ■ "Resident Fonts, Typefaces, and Symbol Sets" on page 3-7
- ■ "Optional Fonts" on page 3-14

# Introduction

This chapter defines common terms used in the description of fonts and typefaces, and displays the printer's resident typefaces.

# About Typefaces and Fonts

Many of the terms and phrases used in desktop publishing are derived from the language of professional printers and typesetters. This section explains common words and phrases used when discussing typefaces.

| Typeface | Typeface Family |
|---|---|
| A named design of a set of printed characters, such as Times, that has a specified obliqueness (degree of slant) and stroke weight (thickness of stroke). It does not define a particular size. | A group of similar typefaces. For example, the Times typeface family consists of four typefaces: Times Roman, **Times Bold**, *Times Italic*, and ***Times Bold Italic***. |
| **Font** | **Character Set** |
| A set of characters of the same typeface (such as Times), style (such as *italic*), stroke weight (such as **bold**), and point size (such as 10). Although you hear the term "font" used more generally, as if referring to a typeface, it's really only a member of a typeface family. | A collection of symbols designed for various printing applications. Many character sets are composed of the letters (uppercase and lowercase A-Z), digits (0-9), and any symbol (such as blank space, dollar sign, and ampersand). Other character sets are composed entirely of symbols. |

## Typeface Classification

One way of classifying the different typefaces is to group them into the following categories:

### Serif

A serif is a decorative line or tail on the ends of the strokes of a letter. Serifs, usually on the lower half of a letter, have also been referred to as feet or curlicues. Courier, ITC Bookman, New Century Schoolbook, Palatino, and Times are serif typefaces. In the example shown, all the letters except "e" and "o" have serifs.

Times Roman

### Sans Serif

Sans serif ("sans" is French for "without") indicates a typeface without any of these small tails. A sans serif typeface is decorative by the shape and styling of its letters but has less detail than a serif typeface. Helvetica, Helvetica Condensed, Helvetica Narrow, and ITC Avant Garde Gothic are all sans serif typefaces. In the example shown above, the slight curving at the bottom of the letters "t" and "a" is not a serif. It is part of the line forming the letter rather than a decorative line added on.

Helvetica

### Script

Script typefaces simulate handwriting or brush lettering. Each letter is connected visually, if not physically. ITC Zapf Chancery is a script typeface.

Zapf Chancery

### Pi or Symbol

Pi or symbol typefaces are collections of assorted special-purpose characters (for example, decorative, graphic, math, or

$$\Sigma\psi\mu\beta o\lambda$$

monetary characters). They are especially useful for highlighting items in lists, providing graphics, and displaying symbols that might otherwise have to be drawn in by hand. Many typefaces today include a complement of the more commonly used pi characters. Symbol and ITC Zapf Dingbats are pi typefaces.

## Typography Terms

### Monospacing

The terms "monospaced" and "fixed-pitch" refer to a typeface whose characters all have uniform and equal spacing. These typefaces are useful for spreadsheets and other documents with columnar data. Monospacing is the opposite of proportional spacing.

### Proportional Spacing

The term "proportionally spaced" refers to a typeface in which the width of each character varies. For example, the letter "i" is thinner than the letter "m" and therefore takes up less space. Proportional spacing saves page space and is easier on the eye. This manual's text uses the Helvetica font, a proportionally spaced typeface.

alphabet
alphabet

Because proportionally spaced type-faces place each character according to its individual size, they increase legibility and readability. This example shows the difference between a monospaced typeface (Courier) and a proportional typeface (Times).

## Bitmapped Font

A bitmapped font is a one in which each character is represented by a set of dot patterns. Each font size requires a different set of dot patterns.

## Scalable Font

A scalable font is one in which each character's dot pattern (bitmap) is generated from a mathematical representation (or outline) of the character. Scalable fonts eliminate the need to store many different font sizes.

## Point Size

Point size refers to the height of a proportionally spaced typeface. A point is a unit of measure equal to $1/72$". Therefore, the larger the point size, the larger the letter. The following example shows characters in 8, 10, 12, 24, and 36 point sizes:

A B C D E

## Pitch

Pitch refers to the number of characters per horizontal inch (cpi) in a monospaced typeface. Therefore, the larger the pitch, the smaller the letter. For example, a ten-pitch typeface prints ten characters per inch (or 10 cpi) while a twelve-pitch typeface prints twelve characters per inch (or 12 cpi). The example shows ten-pitch and twelve-pitch Courier.

```
mathematic
|---+---+---+---|
0               1

mathematical
|---+---+---+---|
0               1
```
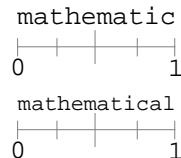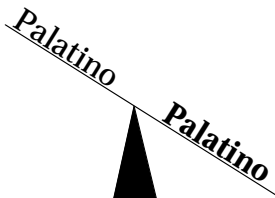
### Stroke Weight

Stoke weight (light/medium/bold) is the width (thickness) of the lines (strokes) that make up a character. The example at left shows the medium and bold weights of Palatino.

### Italic and Oblique Forms

Italic was originally developed in the early sixteenth century as a typeface based on cursive handwriting. Today's italics are still individually crafted typefaces designed to blend with a specific roman (upright) typeface.

Times Roman
*Times Italic*

ITC Avant Garde Roman
*ITC Avant Garde Oblique*

Oblique (or slanted) type forms, however, are not designed and crafted individually but are mechanically slanted versions of the roman form from which they derive.

### Orientation

Orientation is the direction of the print or image on a page. Portrait orientation reads from left to right, across the narrower dimension of the page. Landscape orientation also reads from left to right but places the print across the wider dimension of the page. Spreadsheet and table applications commonly use landscape printing. Both terms

derive from painting; a portrait is usually a vertical view while a land-
scape is usually a horizontal view.
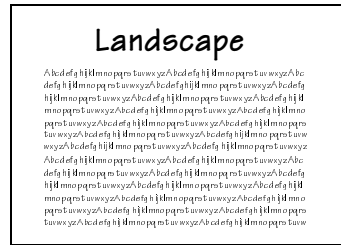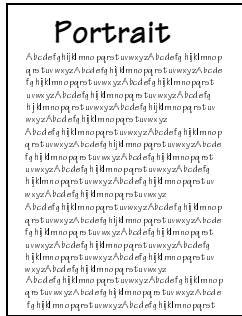
# Resident Fonts, Typefaces, and Symbol Sets

## Resident PostScript Fonts

The following 42 PostScript fonts are resident in your printer. See your
QMS vendor if you are interested in expanding your printer's typeface
families.

All of these typeface families are authentic: they are licensed, they
carry the true name, and they have multilingual character sets.

## Serif Fonts

ITC Bookman Light             Palatino Roman
*ITC Bookman Light Italic*      *Palatino Italic*
ITC Bookman Demibold      **Palatino Bold**
*ITC Bookman Demibold Italic*    ***Palatino Bold Italic***

New Century Schoolbook Roman    Times Roman
*New Century Schoolbook Italic*     *Times Italic*
**New Century Schoolbook Bold**    **Times Bold**
***New Century Schoolbook Bold
Italic***                      *Times Bold Italic*

```
Courier
Courier Oblique
Courier Bold
Courier Bold Oblique
```

## Sans Serif Fonts

ITC Avant Garde Gothic Book      Helvetica Condensed
*ITC Avant Garde Gothic Book Oblique* *Helvetica Condensed Oblique*
**ITC Avant Garde Gothic Demibold**   **Helvetica Condensed Bold**
***ITC Avant Garde Gothic Demibold
Oblique***                    ***Helvetica Condensed Bold Oblique***

Helvetica                     Helvetica Narrow
*Helvetica Oblique*             *Helvetica Narrow Oblique*
**Helvetica Bold**               **Helvetica Narrow Bold**
***Helvetica Bold Oblique***      ***Helvetica Narrow Bold Oblique***

## Script Font

ITC Zapf Chancery Medium Italic

## Pi or Symbol Fonts

Σψμβολ (Symbol)

⌘✳■☀✶❀▼▲ (ITC Zapf Dingbats)

### Other Fonts

OCR-B

PC US ASCII

PC Multilingual

# Resident HP PCL 5e Fonts

Your printer has resident HP PCL 5e fonts. This gives the QMS 4060 the ability to emulate the HP LaserJet 5Si. All fonts can be automatically rotated to landscape orientation.

» **Note:** *300/600 dpi switching is available.*

This table is a complete list of the fonts available for PCL 5e. They can be automatically rotated to landscape orientation. All fonts are scalable and available in 32 symbol sets unless otherwise noted.

| Font | Pi/ Symbol | Sans Serif | Script | Serif |
|---|---|---|---|---|
| Adobe Symbol Medium (1 symbol set) | ✓ | | | |
| Albertus Semi Bold<br>Albertus Extra Bold | | ✓<br>✓ | | |
| Antique Olive Medium<br>Antique Olive Italic Medium<br>Antique Olive Bold | | ✓<br>✓<br>✓ | | |
| Arial<br>Arial Bold<br>Arial Italic<br>Arial Bold Italic | | ✓<br>✓<br>✓<br>✓ | | |
| Clarendon Condensed Bold | | | | ✓ |
| Coronet Italic Medium | | | ✓ | |

| Font | Pi/ Symbol | Sans Serif | Script | Serif |
|---|---|---|---|---|
| Courier Medium | | | | ✓ |
| Courier Italic Medium | | | | ✓ |
| Courier Bold | | | | ✓ |
| Courier Bold Italic | | | | ✓ |
| Garamond (Stempel) Medium | | | | ✓ |
| Garamond (Stempel) Italic Medium | | | | ✓ |
| Garamond (Stempel) Bold | | | | ✓ |
| Garamond (Stempel) Italic Bold | | | | ✓ |
| Letter Gothic Medium | | ✓ | | |
| Letter Gothic Italic Medium | | ✓ | | |
| Letter Gothic Bold | | ✓ | | |
| Line Printer Legal Medium (8.5 points, 25 symbol sets) | | ✓ | | |
| Line Printer PC-850 Medium (8.5 points, 25 symbol sets) | | ✓ | | |
| Line Printer PC-8 D/N Medium (8.5 points, 25 symbol sets) | | ✓ | | |
| Line Printer PC-8 Medium (8.5 points, 25 symbol sets) | | ✓ | | |
| Line Printer Roman-8 Medium (8.5 points, 25 symbol sets) | | ✓ | | |
| Line Printer ECMA-94 Latin 1 (ISO8859/1) (8.5 points, 25 symbol sets) | | ✓ | | |
| Merigold | | | ✓ | |
| Omega Medium | | ✓ | | |
| Omega Italic Medium | | ✓ | | |
| Omega Bold | | ✓ | | |
| Omega Italic Bold | | ✓ | | |

| Font | Pi/ Symbol | Sans Serif | Script | Serif |
|------|------------|------------|--------|-------|
| Times Medium<br>Times Italic Medium<br>Times Bold<br>Times Italic Bold | | | | ✓<br>✓<br>✓<br>✓ |
| Times Roman Medium<br>Times Roman Italic Medium<br>Times Roman Bold<br>Times Roman Italic Bold | | | | ✓<br>✓<br>✓<br>✓ |
| Univers Medium<br>Univers Italic Medium<br>Univers Bold<br>Univers Italic Bold | | ✓<br>✓<br>✓<br>✓ | | |
| Univers Condensed Medium<br>Univers Condensed Italic Medium<br>Univers Condensed Bold<br>Univers Condensed Italic Bold | | ✓<br>✓<br>✓<br>✓ | | |
| Wingdings (1 symbol set) | ✓ | | | |

## PCL 5e Symbol Sets

This table lists all of the PCL 5e symbol sets that are supported on the QMS 4060 Print System.

| | |
|---|---|
| Roman - 8 | Microsoft - Pub |
| PC - 850 | Pi - font |
| PC8 - US | PS - Text |
| PC8 - DN | Ventura - Intl |
| Legal | Ventura - Math |
| ISO - 4 (UK) | Ventura - US |
| ISO - 6 (ASCII) | Windows 3.0 (LATIN 1) |
| ISO -11 (SWED) | ISO - Latin - 1 |
| ISO - 15 (ITAL) | ISO - Latin - 2 |
| ISO - 17 (SPAN) | ISO - Latin - 5 |
| ISO - 21 (GERM) | PC - 852 (Latin 2) |
| ISO - 60 (NORW) | PC - 8tk |
| ISO -69 (FREN) | Windows 3.1 1-1 (Latin 1) |
| Desktop | Windows 3.1 1-2 (Latin 2) |
| PS - Math | Windows 3.1 1-3 (Latin 3) |
| Math - 8 | MC - Text |

# Resident HP-GL Symbol Sets

Your printer has the following resident HP-GL symbol sets. All come
in both fixed- and variable-spaced versions, and all are scalable.

| | |
|---|---|
| Fixed space ANSI ASCII | Variable space ISO IRV |
| Fixed space 9825 Character Set | Fixed space ISO Swedish |
| Fixed spaceFrench/German | Fixed space ISO Swedish for names |
| Fixed space Scandinavian | Fixed space ISO Norway version 1 |
| Fixed space Spanish/Latin American | Fixed space ISO German |
| Fixed space Special symbols | Fixed space French |
| Fixed space JIS ASCII | Fixed space United Kingdom |
| Fixed space Roman extensions | Fixed space Italian |
| Fixed space Katakana | Fixed space Spanish |
| Fixed space ISO IRV | Fixed space Portuguese |
| Variable space ANSI ASCII | Fixed space Norway version 2 |
| Variable space 9825 Character set | Variable space ISO Swedish |
| Variable space French/ German | Variable space ISO Swedish for names |
| Variable space Scandinavian | Variable space ISO Norway version 1 |
| Variable space Spanish/Latin American | Variable space German |
| Variable space Special symbols | Variable space French |
| Variable space ASCII | Variable space United Kingdom |
| Variable space Roman extensions | Variable space Italian |
| Variable space Katakana | Variable space Spanish |
| | Variable space Portuguese |
| | Variable space Norway version 2 |

# Optional Fonts

Your printer supports the following optional fonts:

■ A disk containing typefaces (fonts), such as the ProCollection for the HP emulations on your printer or other special fonts.

■ A SIMM containing 65 ProCollection fonts for the HP emulation on your printer.

■ A Kanji Option Kit that contains either a pre-formatted external hard disk with Kanji fonts and other files or a Kanji SIMM.

Contact QMS or your printer vendor for availability of these fonts. QMS also provides logos, signatures, and other form services. See appendix A, "QMS Customer Support," for locations and telephone numbers.

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# 4

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# Printer Configuration

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## In This Chapter . . .

- "Methods of Configuration" on page 4-2
- "Configuration Menu" on page 4-4
- "Operator Control Menu" on page 4-16
- "Administration Menu" on page 4-46
- "Installation Menu" on page 4-104

# Introduction

This chapter begins by listing and describing the different ways you can configure your printer to meet your special printing needs.

The next section describes how to use the printer control panel to access the configuration menu and how to make configuration changes.

The rest of the chapter provides basic printer configuration information about some of the configuration menu options. The *QMS Crown-Net Interface System Administrator's Guide* (on the *QMS Software Utilities* CD-ROM) contains the CrownNet submenu configuration information for the Ethernet interface. In both guides, menu features are grouped according to task. Each feature is introduced, then a table describes the feature's location in the configuration menu, the available choices for that feature, and the factory default (the value set at the factory).

# Methods of Configuration

You have five ways to configure your printer to meet your printing needs:

- Through an application

- Through printer commands

- Through the printer control panel

- Through a remote console (for network users)

- Through a local console

## Using an Application

Using your application is the best way to control your printer since most printing is done on a per-job basis. This helps prevent confusion in network environments and saves you from making changes at the

printer control panel. Your application documentation explains how to control your printer settings: probably by choosing options from a printing menu.

Applications use printer drivers to send appropriate commands to the printer for requested tasks. If your application doesn't have a QMS 4060 Print System driver, you can select a comparable PostScript driver, such as the QMS Level 2 Windows driver or a LaserWriter driver. However, comparable drivers may not allow you to access all of your printer's features, such as 600x600 dpi printing, duplexing, or collating.

# Using QMS Document Option Commands

QMS Document Option Commands (DOCs) can enable job-specific features your application or page description language can't access. See your *QMS Crown Document Option Commands* manual on the *QMS Software Utilities* CD-ROM for information on the DOC commands. See appendix C, "Document Option Commands," of this manual for a list of DOCs this printer supports.

# Using the Control Panel

Your printer is configured at the factory for most typical printing environments, so most users don't have to use the control panel often. However, if you do need to change a printer setting for all print jobs (not just on a per-job basis), you can do so through the control panel. If you're working in a shared printing environment, your system administrator should be the only person to make changes through the printer's control panel.

» **Note:** *The menu navigation button functions appear on the display panel only when the printer is off line.*

# Using a Remote Console

Many of the configuration choices that can be made at the control panel can also be made via a Remote Console session from CrownAdmin. You can run Remote Console via Telnet a TCP/IP envi-

ronment. To avoid confusion in a shared printing environment, only
the system administrator should make configuration changes. See
the QMS CrownAdmin on-line help for information on using Remote
Console.

» **Note:** *If a remote console has the printer off line, pressing the Online
button will not take effect until the console puts the printer back on
line.*

## Using the Local Console Port

The Local Console port can also allow you to make configuration
choices that are normally made at the control panel. See chapter 6,
"Local and Remote Console," of the *Operations* manual for more
information.

» **Note:** *If a local console has the printer off line, pressing the Online
button will not take effect until the console puts the printer back on
line.*

# Configuration Menu

The printer's configuration menu allows you to change the default
printer configuration settings. Any changes made to the configuration
will reside as new default settings and affect all subsequent print jobs.

The options in the configuration menu are organized under three
main menus:

■ **Operator Control Menu**

Use this menu to select document processing options such as
copy count, choosing input and output paper bins, chaining input
bins, and duplexing (if a duplexing unit is installed). Document
processing options are usually specified within individual jobs
since each job has its own requirements. However, if there's no
way of specifying these options within an application, use the
control panel to change options, send the job, and then change
the defaults back.

» **Note:** *Defining document processing options for a particular job through the control panel is not recommended in a shared environment. When many systems are using the same printer, there's no way of making sure that no other jobs are sent to the printer while the defaults are changed. The Operator Control menu may be password-protected with an optional security key if the system administrator does not want users changing defaults.*

■ **Administration Menu**

Use this menu to maintain printer-host communication information, and for selecting and configuring printer emulations, configuring special pages, printing engine calibration, and configuring hard disks (if installed).

» **Note:** *For information on printer-host communication using the Ethernet interface or any of the Administration/Communications/ Network/CrownNet options, see chapter 2, "Printer Configuration," in the QMS CrownNet System Administrator's Guide on the QMS Software Utilities CD-ROM. The Administration menu may be password protected with an optional security key if the system administrator does not want users changing defaults.*

■ **Installation Menu**

Use this menu to establish passwords for the Operator Control and Administration menus. This menu displays only when an optional security key is installed.

## Accessing the Configuration Menu

To access the configuration menu, make sure the printer is idle (IDLE displays in the message window), then press the Online button to take the printer off line (the Online button function changes to Offline), and finally press the Menu button.

### Example

The following table shows how to use control panel buttons to access the printer configuration menu. Press the control panel buttons in the

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order shown. The printer responds by displaying a status message or configuration menu in the message window.

» **Note:** *You may need to press the Next button more than one time to advance through the list of options.*

| Press this button | to... | The message window reads... |
|---|---|---|
| **Online** | Take the printer off line and ready the printer for configuration. | IDLE |
| **Menu** | Access the configuration menu. | CONFIGURATION OPERATOR CONTROL |

The printer must be off line and idle before you can access the configuration menu.

## Selecting Configuration Menu Options

Once you access the configuration menu, you use the control panel buttons to move through the menu. Use the following buttons:

| Press this button | to... |
|---|---|
| Next | Advance to the next option or submenu within a menu. |
| Previous | Return to the previous option or submenu within a menu. |
| Select | Select an option or enter a submenu. |

## Example

To change the default printer emulation from ESP to PostScript, press the control panel buttons in the order shown in the following table.

» **Note:** *You may need to press the Next button more than once to advance through the list of selections or options.*

| Press this button | to... | The message window reads... |
|---|---|---|
| **Online** | Turn off the Online indicator and ready the printer for configuration. | `IDLE` |
| **Menu** | Access the configuration menu. | `CONFIGURATION`<br>`OPERATOR`<br>`CONTROL` |
| **Next** | Advance to the Operator Control/ Administration menu. | `CONFIGURATION`<br>`ADMINISTRATION` |
| **Select** | Access the Administration menu | `ADMINISTRATION`<br>`COMMUNICATIONS` |
| **Select** | Access the Communications menu. | `COMMUNICATIONS`<br>`TIMEOUTS` |
| **Next** | Advance to the Communications/Parallel menu. | `COMMUNICATIONS`<br>`PARALLEL` |
| **Select** | Access the Parallel menu. | `PARALLEL`<br>`MODE` |
| **Next** | Advance to the Parallel/ Emulation menu. | `PARALLEL`<br>`EMULATION` |
| **Select** | Access the Emulation menu. | `EMULATION`<br>`ESP` |
| **Previous** | Advance to the Emulation/ PostScript menu. | `EMULATION`<br>`POSTSCRIPT` |

| Select | Select PostScript as the default emulation. | `POSTSCRIPT`<br>`IS SELECTED` |
| | After 3 seconds you are returned to the Parallel/Emulation menu. | `PARALLEL`<br>`EMULATION` |
| Offline or Menu | Exit from the menu (Offline) or return to the previous menu (Menu). You are prompted to save your change(s). | `SAVE CHANGES?`<br>`NO` |
| Next | Advance to the Save Changes?/ Yes option. | `SAVE CHANGES?`<br>`YES` |
| Select | Select YES. The printer finishes printing any print jobs in process, saves your change, and returns to idle. | `IDLE` |

## Changing Character Information

Sometimes, rather than selecting an option, you need to enter character information. A character is any letter, digit, or symbol. A field is a group of characters that have meaning. Use the printer control panel to enter character information in the message window during printer configuration. The maximum length of the message window is 16 characters.

Entering character information through the control panel is similar to setting the time and date on a digital watch. You enter one character

at a time. The current input character flashes. Use the following buttons to change the current input character:

| Press this button | to... |
|---|---|
| **Next** | Advance to the next choice for the current input character. |
| **Previous** | Return to the previous choice for the current input character. |

Once you have changed the current input character, use the following buttons to move the cursor to another input character:

| Press this button | to... |
|---|---|
| **Select** | Advance the cursor to the next character. |
| **Menu** | Return the cursor to the previous character. |

To exit from the character selection process, move the cursor to the last character of the input field (the character farthest to the right) and press the Select button, or move to the first character of the input field (the character farthest to the left) and press the Menu button.

When you exit, the printer verifies character information and confirms it in the message window. If character information is valid, you're returned to the previous menu; if it's invalid, you're returned to the input field. Press the Menu button to cancel any changes to the character information.

If the current character information is longer than the value that you need to enter, replace each extra character with a space. The printer interprets a space at the end of character information as a blank.

### Example

To change the HP-GL emulation scaling percent, press the control panel buttons in the order shown in the following table. The printer

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responds by displaying a status message or configuration menu in the
message window. An underline indicates the current input character
in the message window.

» **Note:** *You may need to press the Next button more than one time to
advance through the list of selections or options.*

| Press this button | to... | The message window reads... |
|---|---|---|
| **Online** | Turn off the Online indicator and ready the printer for configuration. | `IDLE` |
| **Menu** | Access the configuration menu. | `CONFIGURATION`<br>`OPERATOR`<br>`CONTROL` |
| **Next** | Advance to the Administration menu. | `CONFIGURATION`<br>`ADMINISTRATION` |
| **Select** | Access the Administration menu | `ADMINISTRATION`<br>`COMMUNICATIONS` |
| **Next** | Advance to the Emulation menu. | `ADMINISTRATION`<br>`EMULATIONS` |
| **Select** | Access the Emulations menu. | `EMULATIONS`<br>`ESP DEFAULT`<br>`EMUL` |
| **Next** | Advance to the Emulations/HP-GL menu. | `EMULATIONS`<br>`HP-GL` |
| **Select** | Access the HP-GL menu. | `HP-GL`<br>`PLOTTER` |
| **Next** | Advance to the HP-GL/Scaling Percent menu. | `HP-GL`<br>`SCALING PERCENT` |

| Select | Access the Scaling Percent menu. | `SCALING PERCENT`<br>`1̲00` |
|---|---|---|
| Previous | Lower the current character to 0. | `SCALING PERCENT`<br>`0̲00` |
| Select | Select 0 and move the current character to the next 0. | `SCALING PERCENT`<br>`00̲0` |
| Next (5 times) | Advance the current character to 5. | `SCALING PERCENT`<br>`05̲0` |
| Select | Select 5 and move the current character to the last 0. | `SCALING PERCENT`<br>`050̲` |
| Select | Select 50 as the default scaling percent. | `50`<br>`IS SELECTED` |
| | After 3 seconds you are returned to the HP-GL/Scaling Percent menu. | `HP-GL`<br>`SCALING PERCENT` |
| Offline or Menu | Exit from the menu (Online) or return to the previous menu (Menu). You are prompted to save your change(s). | `SAVE CHANGES?`<br>`NO` |
| Next | Advance to the Save Changes?/Yes option. | `SAVE CHANGES?`<br>`YES` |
| Select | Select Yes. The printer finishes printing any print jobs in process, saves your change, and returns to idle. | `IDLE` |

# Saving Configuration Changes

Before the printer can accept print jobs with configuration changes, the changes must be saved.

### Example

To save your configuration changes, press the control panel buttons in the order shown in the following table. The printer responds by displaying a status message in the message window.

| Press this button | to... | The message window reads... |
|---|---|---|
| **Offline or Menu** | Exit from the menu (Online) or return to the previous menu (Menu). You are prompted to save your change(s). | SAVE CHANGES? NO |
| **Next** | Advance to the Save Changes?/ Yes option. | SAVE CHANGES? YES |
| **Select** | Select Yes. The printer finishes printing any print jobs in process, saves your change, and returns to idle. | IDLE |
| **Offline** | Turn the printer on-line and ready the printer to accept and print jobs. | IDLE |

» **Note:** *The printer may need to be restarted before certain changes to the Administration menu take effect. Some changes restart the printer automatically while others display the message* REBOOT NOW? *in the control panel message window. If this message appears, select* YES *to restart the printer and have the change(s) take effect immediately, or select* NO *to wait until you manually restart the printer for changes to take effect.*

# Canceling Configuration Changes

If you change a configuration option and then decide to cancel that change, you can do so when exiting the configuration menu.

### Example

To cancel your configuration changes, press the control panel buttons in the order shown in the following table. The printer responds by displaying a status message in the message window.

| Press this button | to... | The message window reads... |
|---|---|---|
| **Offline or Menu** | Exit from the menu (Offline) or return to the previous menu (Menu) and be prompted to save your change. | SAVE CHANGES? NO |
| **Select** | Select No. The printer finishes printing any print jobs in process, does not save your changes, and returns to idle. | IDLE |
| **Offline** | Turn the printer on-line and ready the printer to accept print jobs. | IDLE |

# Setting the Message Window Language

Status messages and configuration menus can be displayed in the message window in English, French, German, or Spanish. If you need to change the message window language, use the Keypad Language option in the Administration/Miscellaneous menu.

| Menu | Administration/Miscellaneous/Keypad Language |
|---|---|
| **Choices** | English, French, German, Spanish |

| Default | English |
|---|---|
| Notes | The printer must be restarted for changes to the Keypad Language menu to take effect. You can either let the printer restart automatically after you save the change and exit from the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer. |

## Restoring the Factory Default Configuration

If you need to cancel all of the configuration changes you have made, you can reset all of the configuration settings to their factory defaults.

| Menu | Administration/Miscellaneous/Restore Defaults |
|---|---|
| Purpose | Allows you to cancel all of the configuration changes you've made and reset all of the configuration settings to their factory defaults |
| Choices | Yes, No |
| Default | No |
| Notes | This process takes a few minutes to complete. |

## Working with Custom Configurations

### Saving a Default Custom Configuration

| Menu | Administration/Miscellaneous/Save Defaults |
|---|---|
| Purpose | Saves the current printer configuration as a custom default. |
| Choices | **Yes**—Save the current configuration settings as a custom default.<br><br>**No**—Don't save the current configuration settings as a custom default. |
| Default | No |
| Notes | You can save only one configuration; however, you can change the saved configuration at any time. |

### Restoring a Default Custom Configuration

| Menu | Administration/Miscellaneous/Restore Defaults/Saved Defaults |
|---|---|
| Purpose | Reconfigures the printer by using the default custom configuration. |
| Choices | Yes, No |
| Default | No |
| Notes | To restore the saved defaults, access the menu item and select Yes. |

# Rebooting the System

Use this option to restart the system after making a group of configuration menu changes. Before making configuration changes an advanced status page should be printed. After changing any option that requires a system restart, you are prompted to REBOOT NOW? If you want to make other configuration changes choose no. After you make all configuration changes choose Yes to restart the system and have all configuration menu changes take effect at once.

| Menu | Administration/Miscellaneous/Reboot System |
|---|---|
| Choices | Yes—Reboots the system.<br>No—Does not reboot the system. |
| Default | No |
| Notes | This process takes a few minutes to complete. |

» **Note:** *If you save a change and for some reason want to return to the previous state, use the advanced status page as a reference.*

# Operator Control Menu

The Operator Control menu contains the following selections:

| Selection | See this section... |
|---|---|
| Copies | "Copies" on page 4-17 |
| Duplex | "Duplexing" on page 4-17 |
| Offset Stacking | "Offset Stacking" on page 4-18 |
| Face-Up Order | "Face-Up Order" on page 4-18 |
| Collation | "Collation" on page 4-18 |
| Orientation | "Orientation" on page 4-21 |
| Inputbin | "Input" on page 4-21 |
| Outputbin | "Selecting a Paper Outputbin" on page 4-24 |
| Chain Inputbins | "Chaining Paper Inputbins" on page 4-25 |
| LCIT, Lower, Middle, Upper Chaining | "Setting Up Chaining Options" on page 4-26 |
| Custom Input Tray | "Custom Input Bins" on page 4-28 |
| Consumables | "Consumables" on page 4-29 |
| Accounting | "Accounting Menu" on page 4-30 |

# Copies

While it is preferable to use your application to select the number of copies to print, you can change the default number of copies for all print jobs through the printer control panel.

| Menu | Operator Control/Copies |
|---|---|
| Choices | 001-999 |
| Default | 001 |
| Notes | Sets the default number of copies for all subsequent print jobs. When power is turned off and then back on again, the number of copies is restored to the default setting of 001. |

# Duplexing

The Duplex option allows you to print on both sides of the paper.

| Menu | Operator Control/ Duplex |
|---|---|
| Choices | Off, On<br>Off—Prints simplex pages.<br>On—Duplexes each page of each job.<br>Tumble—Prints jobs so they can be bound at the top edge (flip-chart style). |
| Default | Off |
| Notes | If you want to print individual jobs duplex, leave the printer set to Off and choose duplex through your application. |

## Offset Stacking

This option offsets each job as they are stacked in the optional LCOS.

| Menu | Operator Control/Offset Stacking |
|---|---|
| Choices | Off, On<br>Off—Jobs stack normally.<br>On—Each job is offset in the LCOS output tray. |
| Default | Off |

## Face-Up Order

This option allows you to choose stacking your print job in normal face-down order or reverse order.

| Menu | Operator Control/Face-Up Order |
|---|---|
| Choices | Normal, Reverse<br>Normal—Order of printing is first page of the job printed first.<br>Reverse—Order of printing is last page of the job is printed first. |
| Default | Normal |
| Notes | Reverse face-up order is not supported when printing duplex jobs. |

## Collation

Collation is one of your printer's features. It is the printing of sets of multiple copies of a document in numeric order. Your printer is capable of delivering multiple copies of your files in collated order to the

output tray. The following figure shows the collated and uncollated
stacking for two copies of a four-page file.

Collated                    Uncollated
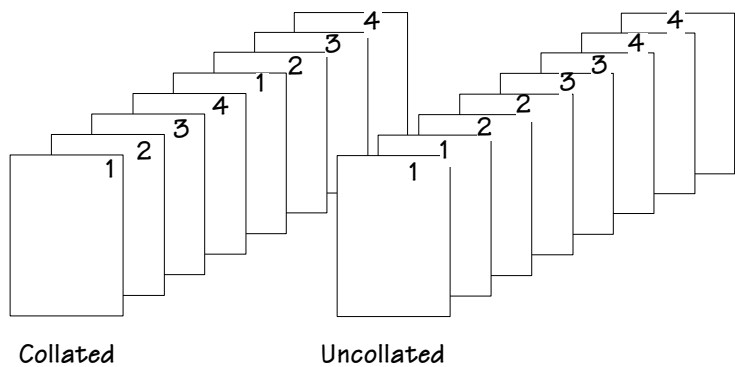
The main advantage of collation is convenience and the time savings
derived from not having to separate and sort individual copies of a
document. Each copy of the document exists as a whole unless
chunk collation has occurred.

## Enabling/Disabling Collation

| Menu | Operator Control/Collation |
|---|---|
| Choices | On—Enable collation.<br>Off—Disable collation. |
| Default | Off |

## Working with Chunk Collation

For a multiple copy document with collation On, there must be
enough display list memory to hold the display list blocks for all pages
in the collation range. See the "Memory" section in chapter 5, for
more information on the Display List compressed blocks. If there is
not enough memory, then a chunk collation boundary is forced after
the last compiled page of the collation range.

» **Note:** *Under normal conditions with 32 MB of RAM and the internal
hard disk for virtual memory, your QMS 4060 should have enough
memory to prevent chunk collation from occurring.*

## Chunk Collation

This mechanism of introducing a forced boundary is known as chunk collation. Chunk collation breaks a document into several smaller, more manageable sets. For example, in the following illustration, copies "a" and "b" of each set must be manually combined to create one collated document. The order of printing is copy 1(a), copy 2(a), copy 3(a), copy 4(a), copy 1(b), copy 2(b), copy 3(b), and copy 4(b).
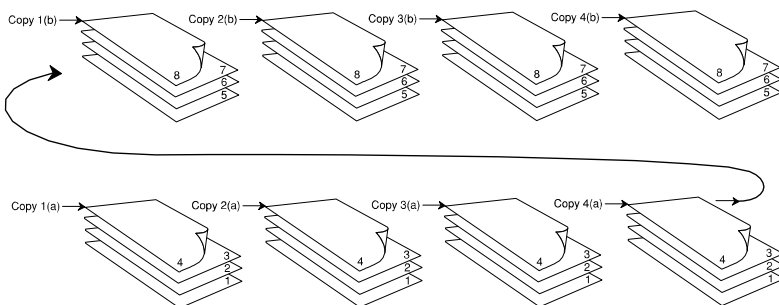


» **Note:** *The order of output on your QMS 4060 Print System is from first to last page.*

To improve collation performance, which allows you to collate longer and more complex print jobs on the QMS 4060 Print System, you can do one of the following:

■ Add more printer memory, which automatically increases the Display List client's memory settings.

■ Take any memory, if available and not being used by other clients, and add it to the Administration/Memory/K Mem Display memory setting.

▲ **Caution:** *This option should be used only by individuals who are familiar with adjusting memory clients' values. Incorrect use of this option could cause your system to operate incorrectly.*

» **Note:** *Collating through your application is more time consuming
than collating through the printer. The application sends the
complete job the requested number of times rather than sending
it once and holding data in printer memory.*

# Orientation

While you can usually specify the orientation of a print job in your
application, if you consistently use a certain paper orientation, you
can set this in the Operator Control/Orientation menu.

| Menu | Operator Control/Orientation |
|---|---|
| Choices | Portrait—Vertical.<br>Landscape—Horizontal. |
| Default | Portrait |

# Input

Your QMS 4060 Print System comes standard with three 500-sheet
paper trays. Using the control panel, you can select a default paper
input source, chain these input sources, and name them.

## Selecting a Paper Inputbin

Your printer has the following inputbins:

| | |
|---|---|
| **Upper Tray** | Holds approximately 500 sheets of letter/A4 to A3/11" x 17" paper. |
| **Middle Tray** | Holds approximately 500 sheets of letter/A4 to A3/11" x 17" paper. |
| **Lower Tray** | Holds approximately 500 sheets of letter/A4 to A3/11" x 17" paper. |

| | |
|---|---|
| **Optional Custom Paper Tray (used in place of one of the other trays)** | Holds approximately 500 sheets of letter/A4 to 11"x17"/A3 paper, statement, B4 (ISO), and B5 (ISO). |
| **Optional Large-Capacity Input Feeder (LCIF)** | Two models—one holds 3000 sheets of letter-size paper and the other holds 3000 sheets of A4-size paper. |

The following illustration shows the locations of these bins.
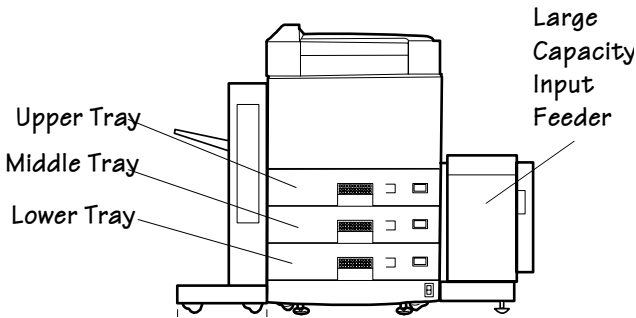


The input trays support several types and sizes of paper. See chapter 2, "Media Types and Weights," of this manual, for information on the types and weights of paper. The optional large-capacity input feeder expands the printer's paper capacity to approximately 4500 sheets of paper (500 sheets for the upper, middle, and lower trays, and 3000 sheets for the input feeder).

The Operator Control/Inputbin menu allows you to select the default tray or tray (inputbin) from which paper is drawn into the printer.

| | |
|---|---|
| **Menu** | Operator Control/Inputbin |
| **Choices** | Upper—Upper tray<br>Middle—Middle tray<br>Lower—Lower tray<br>Optional—Large-capacity input feeder |
| **Default** | Upper |

## Naming Paper Inputbins

Options in the Administration/Engine menu allow you to give each inputbin a more descriptive name. These names are displayed in the printer message window, where appropriate. You can also use the descriptive names with Document Option Commands. (See the *QMS Crown Document Option Commands* manual on the QMS Software Utilities CD-ROM for complete information on Document Option Commands.)

### Inputbin 1

Inputbin 1 is the upper paper tray.

| | |
|---|---|
| **Menu** | Administration/Engine/Inputbin 1 Name |
| **Choices** | Up to 16 characters |
| **Default** | upper |

### Inputbin 2

Inputbin 2 is the middle paper tray.

| | |
|---|---|
| **Menu** | Administration/Engine/Inputbin 2 Name |
| **Choices** | Up to 16 characters |
| **Default** | middle |

### Inputbin 3

Inputbin 3 is the lower paper tray.

| | |
|---|---|
| **Menu** | Administration/Engine/Inputbin 3 Name |
| **Choices** | Up to 16 characters |
| **Default** | lower |

### Inputbin 5

Inputbin 5 is the optional large-capacity paper feeder.

| | |
|---|---|
| **Menu** | Administration/Engine/Inputbin 4 Name |
| **Choices** | Up to 16 characters |
| **Default** | LCIF |

## Paper Output

### Selecting a Paper Outputbin

An option in the Operator Control menu allows you to select the default outputbin (tray).

| | |
|---|---|
| **Menu** | Operator Control/Outputbin |
| **Choices** | Upper <br> Face-Up Stack—optional (appears only if unit is installed) <br> Face-Down Stack—optional (appears only if unit is installed) |
| **Default** | Upper |

### Naming the Paper Outputbin

The Administration/Engine/Outputbin menu is used to name output bins. You can also use this name with DOC commands. (See the *QMS Crown Document Option Commands* manual for information.)

| | |
|---|---|
| **Menu** | Administration/Engine/Outputbin 1 Name |
| **Choices** | Up to 16 characters |
| **Default** | upper |

| Menu | Administration/Engine/Outputbin 2 Name |
|---|---|
| Choices | Up to 16 characters |
| Default | face up stack |

| Menu | Administration/Engine/Outputbin 3 Name |
|---|---|
| Choices | Up to 16 characters |
| Default | face down stack |

# Chaining Paper Inputbins

An option in the Operator Control menu allows you to "chain" input-bins (trays) so that when the first inputbin empties, the printer will automatically draw paper from another inputbin with either the same or any size and type of paper (dependent on the choice selected).

| Menu | Operator Control/Chain Inputbins |
|---|---|
| Choices | On—Switch to the next inputbin with the same size and type of paper when the default inputbin is empty.<br><br>» **Note:** *Make sure the three trays use the same size paper.*<br><br>Off—Don't switch inputbins; use only the default inputbin.<br><br>On Any—Switch to the next inputbin with similar size of paper when the default inputbin is empty. |

| | |
|---|---|
| **Default** | On |
| **Notes** | Use the Operator Control/Inputbin menu to set the default inputbin. Make sure that the three inputbins use the same size paper. |
| | When chaining "on any" and duplexing, the printer will chain to a similar size paper (for example, letter to A4) but not to the large paper sizes—11"x17" and A3. This is because these large sizes are fed through the printer in a different printing order than the smaller sizes. When these restrictions occur on chaining on any, the printer will prompt you to add the default paper size to any tray. The custom tray chaining "on any" for large format- paper will not occur unless there is another custom tray with the same paper size or a standard tray with A3 or 11"x17" paper. |

# Setting Up Chaining Options

Options in the Operator Control menu allow you to configure whether or not an inputbin will be available for chaining from another inputbin.

### Large-Capacity Input Feeder (LCIF)

Use the Operator Control/Chain Option/LCIT Chaining to chain to the optional tray.

| | |
|---|---|
| **Menu** | Operator Control/Chain Option/LCIT Chaining |
| **Choices** | On—Allow media to be pulled from the large-capacity input tray. |
| | Off—Don't allow media to be pulled from the large-capacity input tray. |

| Default | On |
|---|---|
| Notes | The Operator Control/Chain Option menu must be set to On before the setting in this menu takes effect. |
| | »**Note:** *When making this selection, you may use "LCIF," "LCIT," or "Optional" even though your printer menu only displays "Optional."* |

### Lower Inputbin

Use the Operator Control/Chain Option/Lower Chaining to chain to the lower inputbin.

| Menu | Operator Control/Chain Option/Lower Chaining |
|---|---|
| Choices | On—Allow media to be pulled from the lower inputbin if necessary. |
| | Off—Don't allow media to be pulled from the lower inputbin. |
| Default | On |
| Notes | The Operator Control/Chain Option menu must be set to On before the setting in this menu takes effect. |

### Middle Inputbin

Use the Operator Control/Chain Option/Middle Chaining to chain to the middle inputbin.

| Menu | Operator Control/Chain Option/Middle Chaining |
|---|---|
| Choices | On—Allow media to be pulled from the middle inputbin if necessary. |
| | Off—Don't allow media to be pulled from the middle inputbin. |

| | |
|---|---|
| **Default** | On |
| **Notes** | The Operator Control/Chain Option menu must be set to On before the setting in this menu takes effect. |

### Upper Inputbin

Use the Operator Control/Chain Option/Upper Chaining menu to chain to the upper inputbin.

| | |
|---|---|
| **Menu** | Operator Control/Chain Option/Upper Chaining |
| **Choices** | On—Allow media to be pulled from the upper inputbin if necessary. |
| | Off—Don't allow media to be pulled from the upper inputbin. |
| **Default** | On |
| **Notes** | The Operator Control/Chain Option menu must be set to On before the setting in this menu takes effect. |

## Custom Input Bins

This option allows you to set up the paper size for the optional custom input tray. Since the tray can be installed in the upper, middle, or lower tray positions there are three options under this menu—one for each tray position.

| | |
|---|---|
| **Menu** | Operator Control/Custom Input Bin |
| **Choices** | Upper, Middle, or Lower |
| **Default** | The default setting for each tray position is letter paper size. |
| **Notes** | The choices for each tray position are letter, legal, executive, A3, A4, A5, B4, B5, B4 (ISO), B5 (ISO), 11 x 17, Statement. |

# Consumables

These options help you monitor your printer's consumables.

## Printing a Consumables Statistics Page

| Menu | Operator Control/Consumables/Print Statistics |
|---|---|
| Purpose | Prints a consumables statistics page |
| Choices | No, Yes |
| Default | No |
| Notes | The consumables statistics page allows you to check the amount of usage for printer consumables and other printer statistics, such as the number of sheets, faces, and planes printed as well as the average coverage of each color toner.<br><br>» **Note:** *The number of sheets/faces printed statistics differ from the number of sheets printed statistics on the printer's start-up and status pages, which refer to the total number of sheets/faces of media printed during the life of the printer.* |

# Crown Accounting

Crown accounting, a tool to help you keep track of the use of printer resources, is available on your QMS 4060 Print System with a hard disk installed, with or without a network connection.

Paper use is the most commonly monitored resource. However, Crown accounting also allows you to monitor

■ Paper use per user

■ Time consumed serving each user's jobs

■ Connectivity options

■ Frequency of jams

■ Times of peak use

■ Number, complexity, and average size of jobs per user

■ Commonly used features, such as duplexing or finishing

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» **Note:** *If you are connected to a network via TCP/IP, you have a choice of using Crown accounting or the standard TCP/IP accounting through your UNIX host software. See the TCP/IP Protocol Option User's Guide for more information on TCP/IP accounting.*

As jobs are printed on your QMS printer, the system collects information about different job parameters in relation to the jobs. When each job completes, the printer stores an entry for the job in the Job Accounting file(s).

▲ **Caution**: *Do not turn the printer off while the disk is being accessed. Doing so may cause inconsistencies in the information stored.*

### Accounting Menu

The Accounting menu includes five submenus, allowing you to enable or disable job accounting, allocate disk space when accounting is enabled, reset accounting, store job accounting information in a single job file or in multiple files, and copy the accounting information.

Job accounting information may be stored in a single file if it can be retrieved via FTP on your host. Otherwise, the selected job accounting file should be spread into several files.

### Setting the Accounting Mode

The Accounting Mode option enables or disables job accounting. Choices are Enabled or Disabled with a default of Disabled. In order for the accounting process to run on your system, you must enable accounting via the in control panel or via remote console. When accounting is disabled any files containing data remain untouched. However, empty files are removed to save disk space.

### Allocating Disk Space

The Operator Control/Accounting/Disk Space option allocates disk space for job accounting files. The range of values is 51200 (50 KB) to 10240 (10 MB) with a default value of 01024 KB (1 MB).

The amount of space required for each job can vary between 200 and 250 bytes, so each 1 MB in the job accounting file will store information on 4,000 to 5,000 jobs.

If the selected value is greater than the current value, the file size is increased to reserve the extra space. If the value is smaller than the current file size, any empty job accounting files are moved. If only one file is used and it is not empty, it cannot be shrunk.

## Resetaccounting

The Resetaccounting option erases the Accounting files and recreates them using the current file size. If this operation is selected when accounting is disabled, the files are removed but not recreated, thus saving disk space. The range of values is Yes and No. The default value is No.

This operation is also available as the **resetaccount** command for the admin user at a remote console. See the *Remote Console User's Guide* documentation for more information on the **resetaccount** command.

When job files are more than 80% full but less than 100% full, the following message displays on the control panel and remote console:

    *xxxxxxxx* FILE *xxx%* FULL

(*xxx%* is the percentage full, reported as 80%, 85%, 90%, or 95%.) This is an appropriate time to copy these files to floppies or to transfer them to your host computer using ftp if it is available to you. Then use the option to reset the accounting files to empty after they are copied to a floppy or to a host.

When the file is 100% full, the

    *xxx* FILE IS FULL

message displays.

» **Note:** *When accounting is enabled and the Job Accounting files are 100% full, no further print jobs are accepted by the printer until Resetaccounting is selected or until Accounting is disabled. If you disable Accounting at this time, no job information is stored. You can retrieve your accounting files while they are full and then do the Resetaccounting operation. However, to avoid delaying jobs being sent to the printer, it is advisable to perform the retrieve/reset operations before the job accounting files fill up.*

## Segmenting the Accounting Job File

The Job File Segment menu allows you to decide whether accounting information is stored in the printer in a single file or in multiple files. Choices are Single and Multiple, with Multiple as the default. Although it is convenient to store accounting data in a single file, the multiple file option is useful if you must transfer your files to your host via floppy disk.

If a single file is used, its size equals the Disk Space value described earlier in this section. The file name will be ACC1.JOB.

If multiple files are selected, their combined size equals the File Size value described earlier in this section. Each file will be 1 MB, except the last file, which includes the remaining dedicated space. That is, if you dedicate 10 MB to accounting and select multiple files, the printer creates 10 files of 1 MB each. If you dedicate 5.5 MB to accounting, the printer creates 5 files of 1 MB each and one of 500 KB. The Job file names will be ACC1.JOB, ACC2.JOB, and so on.

## Accounting Files

» **Note:** *You can also access these accounting files with the Windows-based QMS Crown Printer Auditor (CPA) utility on the QMS Software Utilities CD-ROM. Refer to the CPA on-line help for more information.*

The following accounting files are stored in ASCII format on SYS, the printer's hard disk, in the SYS:/ADMIN directory:

■ Job Accounting File (ACC*x*.JOB)

This is the main accounting file. When each job completes, the printer stores an entry for the job in this file. The job accounting

file may be a single file or multiple files, with *x* as the file number when multiple files are used. Information in this file is kept intact after the printer is turned off and back on again.

■ Paper Accounting File (ACC.PAP)

This file contains descriptions of the paper types supported on the QMS 4060 Print System.

■ Status Accounting File (ACC.STA)

This file stores configuration information about accounting.

■ Dictionary File (ACC.DIC)

This file contains documentation about accounting and a description of the fields used in the other accounting files

▲ *Caution: All the accounting files are stored in ASCII format to make it simpler to use the information in different environments after it is retrieved from the printer's hard disk.*

## Accounting File Format Description

Accounting files are recorded in ASCII format in a series of tagged fields.

New fields can be added without losing backward compatibility, because each field is tagged. A version field is included in the ACC.STA file to identify the supported fields as the system evolves.

» **Note:** *Field 45 in the Job Accounting File example on page 4-35 illustrates that new fields can be added to the series but used where logical, in this case between fields 6 and 7. Field 45, which provides information about the interface used, was added in response to a customer request.*

## Conventions

The following conventions are the same for job, paper, and status files:

- Tag Identifiers

    These three-digit numbers are used to identify fields. The three-digit number is used instead of a name to minimize use of disk space. The Dictionary file (ACC.DIC) provides the field names associated with each tag identifier.

- String Information

    String information for record field values is stored inside braces (for example, {this is a string}). This allows spaces within strings and stores only the necessary characters of a string value. String fields for which no value is specified are stored as {}, instead of using blanks or the maximum field size.

- New Records

    New records are separated by a <CR> character to increase readability.

- Separators

    A typical record in any of the accounting files is a sequence of pairs of tag identifiers and field values separated by commas. The tag identifier and field value are separated by a colon.

## Example

The following is an example of the format of an accounting file record:

```
 1:  3,  2:{this is a string},  <CR>
```

In this example, the record has fields identified by tags 1 and 2. Since these values don't use 3 digits for the tag identifier, spaces are stored instead, to provide consistency and simplicity while using only a small amount of extra space. In this example, the value for the field tagged 1 is the integer 3 and the value for the field tagged 2 is a string. The <CR> represents the carriage return character.

## Accounting Files Description of Fields

This section includes examples of a job accounting file, a paper accounting file, and a status accounting file. Each example is followed

by a chart explaining the various fields, using data from the example
to help clarify the fields.

## Job Accounting File Record Example

This is a sample record extracted from an actual job accounting file:

```
0: 6,  1: 1,  2:{ 8h 5m52},  3:{ 7/ 7/1998},
4:3,  5:{lsmith},  6:{}, 45:{ IF 1 Ethernet},
7:{Microsoft Word - WW6083WO.DOC},  8:{},  9:
2794, 10: 15414, 11: 1, 12:   0, 13: 2, 14: 3,
15: 0, 16:0, 17:  1, 18: 0, 19:  1, 46:      0,
47:     0, 48:      0, 49:      5,<CR> 20:3,
21: 2
```

## Job Accounting File Record Description

| Field ID | Description | Example | Explanation |
|---|---|---|---|
| **0:** | The Job ID field is the document's number. The number sequence restarts whenever the printer is turned off and on again. | 0: 6 | This is the sixth job since the printer was restarted |
| **1:** | This field is the document's internally assigned priority. | 1:1 | Priority 1, the highest, has been assigned to this job |
| **2:** | This field indicates the time a document arrived in the printer by hour, minute, and second. | 2: {8h5m52} | Printer received job at 8:05:52 |
| **3:** | This field indicates the date a document arrived in the printer. | 3: { 7/ 7/1998} | Printer received job on July 7, 1998 |
| **4:** | This field is the document's completion code:<br>0　User aborted document<br>1　Printer aborted document<br>2　Emulation aborted document<br>3　Successfully printed document | 4: 3 | Job printed successfully |

---

| Field ID | Description | Example | Explanation |
|---|---|---|---|
| 5: | The User Name field corresponds to the %%**For** DOC. | 5: {lsmith} | L Smith sent job |
| 6: | The Host Name field corresponds to the **%%Host** DOC. | 6: {} | No host name assigned |
| 45: | The Connection field indicates the I/O port in which the job arrived. | 45:IF 1 Ethernet | This job arrived via Ethernet |
| 7: | The File Name field corresponds to the **%%Title** DOC. | 7: {Microsoft Word - WW6083WO.DOC} | QMS DOC was used to assign the title Microsoft Word - WW6083WO. DOC |
| 8: | The Charge Number field corresponds to the **%%Charge Number** DOC. This field identifies the account. | 8: {} | No charge number assigned |
| 9: | The Compile Time field is the processor time in milliseconds ($^1/_{1000}$ second) spent translating the page description language. Typically, it also includes minimal other system activity. | 9: 2794 | Processor spent 2.794 seconds compiling the page |
| 10 | The Print Time field represents the total elapsed time in milliseconds($^1/_{1000}$ second) used by the document since its first page started printing until its last page cleared the printer. | 10: 15414 | Job took 15.414 seconds from the start of the first page to the end of the last page |
| 11: | The Header Count field indicates how many images comprise the document header page(s) subjob. An image equals one page face. | 11: 1 | There is one header page |
| 12: | The Error Count field indicates how many images comprise the document error page(s) subjob. An image equals one page face. | 12: 0 | No error pages |

| Field ID | Description | Example | Explanation |
|---|---|---|---|
| **13:** | The Body Count field represents the number of images in the actual document, excluding multiple copies. An image equals one page face. | 13: 2 | Two pages in the document |
| **14:** | The Simplex Count field is number of the page faces printed, including body and header pages and taking into consideration multiple copies. | 14: 3 | Three page faces printed |
| **15:** | The Duplex Count field represents the sheet count of duplex pages printed, taking into consideration multiple copies. | 15: 0 | No duplex pages |
| **16:** | The Finishing Options field is a number formed by adding the codes for the different options: 0None 2Offset Stacking | 16: 0 | No finishing options |
| **17:** | The Chunk Count field represents the number of collated chunks for this job. If the complete document does not fit in memory, chunk collation is activated. A value of 1 for this field indicates no partial collation was necessary. | 17: 1 | Entire job printing in one collated unit |
| **18:** | The Jam field indicates how many times the printer jammed while printing the document. | 18: 0 | No jams during this document |

| Field ID | Description | Example | Explanation |
|---|---|---|---|
| **19:** | The Paper Types Count field indicates how many different types of paper were used in the document and represents the number of separate index entries that follow the main record for the document in the Job Accounting file. A <CR> follows this field before the index entries. | 19: 1 | One type of paper used in this job |
| **46:** | The Cyan Count field is always 0 on monochrome printers. | 46:     0 | There is no cyan toner in the printable area. |
| **47:** | The Magenta Count field is always 0 on monochrome printers. | 47:     0 | There is no magenta toner in the printable area. |
| **48:** | The Yellow Count field is always 0 on monochrome printers. | 48:     0 | There is no yellow toner in the printable area. |
| **49:** | The Black Count field indicates the amount of toner (in square centimeters) used for the entire print job. | 49:     5 | There are 5 square centimeters of toner in the entire print job. |
| **20:** | The Index Count field represents the number of sheets of paper of a specific type used by the document. The actual description of the paper is in the Paper Accounting file. | 20: 3 | Job used three sheets of paper |
| **21:** | The Index field represents the record number in the Paper Accounting file that contains the description for the preceding paper count. A <CR> follows each occurrence of this field. | 21: 2 | A description of the paper type is in Paper Accounting file number 2 |

## Paper Accounting File Record Example

The following example shows a Paper Accounting file:

```
22:  8268, 23: 11693, 24:  75, 25:{ white}, 26:{
plain}, 27:{            },

22:  8500, 23: 11000, 24:  75, 25:{ white}, 26:{
plain}, 27:{            },

22: 7165, 23: 10118, 24:  75, 25:{ white}, 26:{
plain}, 27:{            },

22: 14000, 23: 8500, 24:  75, 25:{ white}, 26:{
plain}, 27:{            },

22: 16535, 23: 11693, 24:  75, 25:{ white}, 26:{
plain}, 27:{            },

22: 14331, 23: 10118, 24:  75, 25:{ white}, 26:{
plain}, 27:{            },

22: 17000, 23: 11000, 24:  75, 25:{ white}, 26:{
plain}, 27:{            },

22: 7500, 23: 10500, 24:  75, 25:{ white}, 26:{
plain}, 27:{            },

22: 8268, 23: 5827, 24: 75, 25:{ white}, 26:{
plain}, 27:{            },
```

## Paper Accounting File Record Description

The Paper Accounting file has one record for each of the nine possible paper sizes. Field 21 refers to a specific record in the Paper Accounting file. In the example above, Field 21 indicates that the paper is of the second type. Therefore, the second record from the

Paper Accounting file describes the paper used. The second record tells you:

| Field ID | Description | Example | Explanation |
|---|---|---|---|
| **22:** | The Paper Width field contains the paper width in mils ($^1/_{1000}$"). | 22: 8500 | The paper is 8500 mils or 8.5" wide |
| **23:** | The Paper Height field contains the paper height in mils ($^1/_{1000}$"). | 23: 11000 | Paper is 11000 mils or 11" high |
| **24:** | The Paper Weight represents the weight per surface square units (g/m$^2$) | 24: 75 | Paper weighs 75 g/m$^2$ |
| **25:** | The Color field indicates the color of the paper. | 25: white | Paper is white |
| **26:** | The Type field indicates additional properties of the paper. | 26: plain | Paper is plain |
| **27:** | The Label field represents a name for the paper type. | 27: { } | No paper type name |

» **Note:** *Fields 24, 25, 26, and 27 are designed primarily for future enhancements to the accounting capabilities.*

## Status Accounting File Record Example

The following is an example of the Status Accounting file:

```
28:  1, 29: 9, 30: 1048576, 31: 1048576, 32: 74993,
33: 74993, 34:  1, 35:  1, 36: 309, 37:2, 38:1, 39:0,
40:0, 41:31, 42:23, 43:31, 44:31
```

## Status Accounting File Record Description

| Field ID | Description | Example | Explanation |
|---|---|---|---|
| **28:** | The Version field indicates the accounting file's version number. The initial version is 1. | 28: 1 | This is the first version of the file |
| **29:** | The Number of Paper Types field indicates how many records are in the Paper Accounting file. | 29: 9 | The paper accounting file has 9 records |
| **30:** | The Job Accounting File Size field indicates how many bytes are dedicated to accounting files. Maximum is 10 MB. | 30: 1048576 | 1048576 bytes, or 1 MB, is dedicated to accounting |
| **31:** | The Last Job File Size field indicates the size of the last file. In the multiple-file configuration, each file is 1 MB except the last, which holds any remaining space. | 31: 1048576 | 1048576 bytes, or 1 MB, is in the last file |
| **32:** | The Job File Usage field indicates in bytes the total current use in all the job files. | 32: 74993 | All accounting files total 74993 bytes |
| **33:** | The Current Job File Usage field indicates in bytes the current level of use in the current Job Accounting file. | 33: 74993 | The accounting file which is currently receiving data totals 74993 bytes |

| Field ID | Description | Example | Explanation |
|---|---|---|---|
| **34:** | The Maximum Number of Job Files field indicates the maximum number of job files. For example, even if your system is configured for multiple files, if only 1 MB is dedicated to accounting, the maximum number of files is 1. If 5.5 MB is dedicated to accounting, the maximum number of files is 6. | 34: 1 | There can be only 1 job accounting file. Although the printer is configured for multiple files (see field 37) there is only one because only 1 MB is dedicated to accounting |
| **35:** | The Current Job File field indicates which file has been used most recently. By comparing this with Field 33, you can determine which file is current and how much space is left in it. | 35: 1 | The most recently used file is File 1 |
| **36:** | The Number of Jobs field indicates how many documents are accounted for in the Job Accounting file(s). A value of 0 can mean that no jobs have been printed or that accounting is disabled. | 36: 309 | Current Job Accounting files hold data on 309 jobs |
| **37:** | The Multifile field has a value of 1 if a single file is used and a value of 2 if multiple files are used to store job information. | 37: 2 | Job Accounting is set for multiple files |
| **38:** | The Enabled field indicates whether accounting is currently enabled or disabled. 1—Enabled 0—Disabled | 38: 1 | Accounting is currently enabled |

| Field ID | Description | Example | Explanation |
|---|---|---|---|
| **39:** | The Job File Full flag indicates whether the Job Accounting file is full.<br>1 File is full;<br>Resetaccounting should be performed<br>0 Job accounting file is not full | 39: 0 | Accounting files are not full |
| **40:** | The Paper Accounting File Full flag indicates whether the Paper Accounting file is full.<br>1 File is full; Resetaccounting should be performed<br>0Job accounting file is not full | 40: 0 | The Paper Accounting file is not full |
| **41:** | The User field indicates the maximum character length of the User Name field in the Job Accounting file. User names are assigned with QMS DOC. | 41: 31 | The User name can be up to 31 characters |
| **42:** | The Host field indicates the maximum character length of the Host Name field in the Job Accounting file. Host names are assigned with QMS DOC. | 42: 23 | The Host name can be up to 23 characters |
| **43:** | The File field indicates the maximum character length of the File Name field in the Job Accounting file. File names are assigned with QMS DOC. | 43: 31 | The File Name can be up to 31 characters |
| **44:** | The Charge field indicates the maximum character length of the Charge Number field in the Job Accounting file. Charge numbers are assigned with QMS DOC. | 44: 31 | The Charge field can be up to 31 characters |

# Copy Accounting Files to Host

Accounting files should be transferred to your host computer periodically to keep the printer from being overloaded with data and to allow you easy analysis of data.

## Using the QMS Crown Printer Auditor (CPA) Utility

You can access the accounting files with the Windows-based QMS Crown Printer Auditor (CPA) utility on the *QMS Software Utilities* CD-ROM. Refer to the CPA on-line help for more information.

## Using the File Transfer Protocol (FTP)

» **Note:** *FTP works only when the printer is off line and the message window displays* IDLE. *Use the* **ls** *command in the SYS:/admin directory to see which accounting files you are going to retrieve. The ls command is issued from a remote console. If multiple Job Accounting files are used, each of the ACCx.JOB files should be copied. (x is the number of each subsequent Job Accounting file.)*

Use File Transfer Protocol (FTP) on the host, if a TCP/IP connection is available to the printer, to copy the files from the printer's hard disk to the host as follows:

1  **Type** `ftp` `printer-name` **(where** `printer-name` **is either the IP address of the printer or its corresponding host name).**

2  **If your printer has a DECnet-TCP/IP interface, follow these steps. Otherwise go to step 3.**

    a    When prompted for a user id, enter `admin` as the user name and give the appropriate password, if required.

    b    At the ftp> prompt, type `bin`↵ to use binary mode for the download procedure.

c   Type

```
get SYS:/admin/acc1.job acc1.job↵
get SYS:/admin/acc.pap acc.pap↵
get SYS:/admin/acc.sta acc.sta↵
```

»   **Note:** *If multiple Job Accounting files are used, each of the ACCx.JOB files should be copied. (x is the number of each subsequent Job Accounting file.)*

d   Continue at step 4.

**3   If your printer has a CrownNet interface, follow these steps:**

a   When prompted for a user id, enter root as the user name and give the default password (pass).

b   At the ftp> prompt, type bin↵ to use binary mode for the download procedure.

c   Type

```
get SYS:/admin/acc1.job acc1.job↵
get SYS:/admin/acc.pap acc.pap↵
get SYS:/admin/acc.sta acc.sta↵
```

»   **Note:** *If multiple Job Accounting files are used, each of the ACCx.JOB files should be copied. (x is the number of each subsequent Job Accounting file.)*

**4   Exit ftp.**

Type quit↵

## Processing Accounting Information on the Host

After the accounting files are stored on your host, you can create your own filters (programs) based on your specific requirements using the file and record descriptions shown earlier in this chapter.

# Administration Menu

The Administration menu contains the following submenus:

| Selection | See this section... |
|---|---|
| Communications | "Communications" on page 4-46 |
| Emulations | "Emulations" on page 4-56 |
| Special Pages | "Special Pages" on page 4-73 |
| Startup Options | "Printer Start-Up Options" on page 4-77 |
| Memory | "Memory" on page 4-79 |
| Engine | "Engine" on page 4-86 |
| Consumables | "Consumables" on page 4-92 |
| Miscellaneous | "Resetting All Consumables Statistics Counters" on page 4-98 |
| Disk Operations | "Hard Disks" on page 4-102 |

# Communications

This menu contains several options that allow you to configure the printers communication parameters to match the host and application parameters.

» **Note:** *This section contains information on the Timeouts, Parallel, and Network2 menus. For information on printer-host communication using the Ethernet interface or any options located under the CrownNet submenu (Administration/Communications/Network2/ CrownNet), see chapter 2, "Printer Configuration," of the QMS CrownNet System Administrator's Guide. For information on the optional serial and LocalTalk interfaces, see the Options manual.*

# Setting Timeouts

The Timeouts options limit the amount of time the printer waits on transmission from the host for various types of data.

## Setting a PostScript Emulation Timeout

The PostScript emulation timeout is the maximum number of seconds the PostScript emulation waits for incoming data.

| | |
|---|---|
| **Menu** | Administration/Communications/Timeouts/PS Wait Timeout |
| **Choices** | 00000-99999 |
| **Default** | 00030 (30 sec.) |
| **Notes** | A value of 00000 is the same as infinity (no timeout). The job is closed and the next job in the queue begins if all of the following occur:<br><br>■ No additional data is received during the specified period of time.<br><br>■ The interface didn't time out.<br><br>■ An EOD (end-of-document commands) was not seen.<br><br>When a print job is sent from a Macintosh, the PS Wait timeout is automatically changed to 00300 (5 min.).<br><br>Large print jobs, such as those generated by graphics or computer-aided design applications, require timeouts of 00300 (5 min.). |

### Setting an Emulation Timeout

The emulation timeout is the maximum number of seconds emulations other than PostScript (such as HP-GL, HP PCL5e, and Line-printer) wait for incoming data.

| Menu | Administration/Communications/Timeouts/Emul Timeout |
|---|---|
| Choices | 00000-99999 |
| Default | 00005 (5 sec.) |
| Notes | A value of 000 is the same as infinity (no timeout). |

### Setting a Print Job Timeout

The print job timeout is the maximum number of seconds the printer processes a print job before it ends the job.

| Menu | Administration/Communications/Timeouts/Job Timeout |
|---|---|
| Choices | 00000-99999 |
| Default | 00000 (infinity, no timeout) |
| Notes | A value of 000 is the same as infinity (no timeout). |

### Setting an ESP Timeout

The ESP timeout is the maximum number of seconds the printer waits to match an emulation before printing the job in the default emulation.

| Menu | Administration/Communications/Timeouts/ESP Timeout |
|---|---|
| Choices | 00000-99999 |

| Default | 00003 (3 sec.) |
|---------|----------------|
| Notes | A value of 00000 is the same as infinity (no timeout). |

# Setting Parallel Interface Parameters

Use the Administration/Communications/Parallel menu to set the parallel interface values used for printer-host communications.

## Mode

The parallel interface supports Centronics parallel communication as well as IEEE 1284 bidirectional parallel communication.

| Menu | Administration/Communications/Parallel/Mode |
|------|---------------------------------------------|
| Choices | Interactive—Establish two-way communication between the host and the printer.<br>Noninteractive—Establish one-way communication from the host to the printer.<br>Disabled—Turn off parallel communication with the host. The printer stops accepting print jobs over the parallel interface. |
| Default | Noninteractive |
| Notes | The printer must be restarted for changes to the menu to take effect. You can either let the printer restart automatically after you save the change and exit from the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer. See chapter 5, "Additional Technical Information," for a discussion of the different modes. |

# Emulation

Sets the parallel interface emulation.

| Menu | Administration/Communications/Parallel/Emulation |
|---|---|
| **Choices** | ESP, Hexdump, PostScript, PCL5e, HPGL, Lineprinter<br><br>» **Note:** *Other optional emulations, such as LN03+, QUIC, TIFF, CALS, CCITT, and CGM, also appear, if installed.* |
| **Default** | ESP |

### Minimum Number of Kilobytes for Spooling

Sets the minimum number of kilobytes of system memory allocated to the parallel interface.

| Menu | Administration/Communications/Parallel/Min K Spool |
|---|---|
| **Choices** | 00000-99999 |
| **Default** | 00015 |
| **Notes** | This value must be less than K Mem For Spool in the administration/memory submenu.<br><br>A 00000 value does not turn off the spooling buffer for the parallel interface. If the value is set to 00000, the printer calculates the Min K Spool automatically at initialization.<br><br>The printer must be restarted for changes to the Min K Spool menu to take effect. You can either let the printer restart automatically after you save the change and exit the configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer. |

## Spooling Timeout

Sets the number of seconds the interface waits for data from the host before terminating a spooled print job.

| Menu | Administration/Communications/Parallel/Spool Timeout |
|---|---|
| Choices | 00000-99999 |
| Default | 00030 |

### Data Bits

Sets the number of data bits transmitted per character.

| Menu | Administration/Communications/Parallel/Data Bits |
|---|---|
| Choices | 7, 8 |
| Default | 8 |

### End Job Mode

Enables (and identifies an end-of-job sequence) or disables data stream sensing for the end-of-document (EOD) command.

| Menu | Administration/Communications/Parallel/End Job Mode |
|---|---|
| Choices | None—The printer recognizes only the PostScript ^D command.<br><br>QMS EOD—The printer recognizes only the QMS %%EndOfDocument command.<br><br>HP EOD—The printer recognizes only the HP <ESC>%12345X command. |

| Default | None |
|---------|------|
| Notes | See chapter 5, "Additional Technical Information," for details on how to implement this feature on your QMS 4060 Print System. |

## Default Job Priority

Allows you to specify which jobs are printed first, according to the interface through which they are received, when jobs are received simultaneously.

| Menu | Administration/Communications/Parallel/Def Job Prio |
|------|------|
| Choices | 001-100 (highest-lowest priority) |
| Default | 001 (highest priority) |
| Notes | For example, you can give jobs received via the parallel interface priority over jobs received via the Ethernet interface. |

## PS Protocol

Sets the binary communications protocol (BCP) for communicating over a parallel interface to a PostScript printer.

| Menu | Administration/Communications/Parallel/PS Protocol |
|------|-----------------------------------------------------|
| **Choices** | Normal—Enables standard, ASCII (7-bit) hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can change this setting through PostScript operators.<br><br>Normal Fixed—Enables standard, ASCII (7-bit) hex protocol. Print jobs cannot change this setting through PostScript operators.<br><br>Binary—Enables binary communications protocol (BCP). Print jobs can change this setting through PostScript operators. Data in the printable ASCII range also prints.<br><br>Binary Fixed—Enables binary communications protocol (BCP). Print jobs cannot alter change this setting through PostScript operators. Data in the printable ASCII range also prints. |
| **Default** | Normal |
| **Notes** | See chapter 5, "Additional Technical Information," for a full discussion of PS Protocol. |

# Setting Network 2 Options

### CrownNet

For information on options and defaults found in this menu, see chapter 2, "Printer Configuration," in the *QMS CrownNet System Administrator's Guide*.

### PS Protocol

Sets the binary communications protocol (BCP) for communicating over a CrownNet interface to a PostScript printer.

| Menu | Administration/Communications/Network 2/PS Protocol |
|---|---|
| **Choices** | Normal—Enables standard, ASCII (7-bit) hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can change this setting through PostScript operators.<br><br>Normal Fixed—Enables standard, ASCII (7-bit) hex protocol. Print jobs cannot change this setting through PostScript operators.<br><br>Binary—Enables quoted binary communications protocol (BCP). Print jobs can change this setting through PostScript operators. Data in the printable ASCII range also prints. |

|  | Binary Fixed—Enables binary communications protocol (BCP). Print jobs cannot change this setting through PostScript operators. Data in the printable ASCII range also prints.<br><br>QBinary (Quoted Binary)—Enables quoted binary communications protocol. Print jobs can change this setting through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism (see the following section) for the special characters and ^D (EOF).<br><br>QBinary (Quoted Binary) Fixed—Enables binary communications protocol (BCP). Print jobs cannot alter change this setting through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism (see the following section) for the special characters and ^D (EOF). |
|---|---|
| **Default** | Normal |
| **Notes** | See chapter 5, "Additional Technical Information," for a full discussion of PS Protocol. |

## Default Job Priority

Allows you to specify which jobs are printed first, according to the interface through which they are received, when jobs are received simultaneously.

| Menu | Administration/Communications/Network 2/Def Job Prio |
|---|---|
| Choices | 001-100 (highest-lowest priority) |

| Default | 001 (highest priority) |
|---------|------------------------|
| Notes | For example, you can give jobs received via the Ethernet interface priority over jobs received via the parallel and serial interfaces. |

# Emulations

Use the Administration/Emulations menu to set the parameters for the available printer emulations. Optional printing emulations appear only if installed.

» **Note:** *To choose an emulation or ESP for a particular interface, use the appropriate interface menu in the Administration/Communications menu.*

## Setting ESP Default Parameters

The ESP Default Emul sets the ESP default emulation used when ESP is unable to identify the language of a print job. This allows the system administrator to select alternate default emulations.

| Menu | Administration/Emulations/ESP Default |
|---------|------------------------|
| Choices | HPGL, Lineprinter, PCL5e, PostScript<br>» **Note:** *Other optional emulations; such as LN03+, QUIC, TIFF, CALS, CCITT, and CGM, also appear, if installed.* |
| Default | PCL5e |

# Setting PostScript Parameters

The PostScript menu allows you to select halftone type and intensity.

### Halftone Type

Sets the halftone type.

| Menu | Administration/Emulations/PostScript/Halftone Type |
|---|---|
| Choices | Basic<br>Standard<br>Advanced |
| Default | Standard |

These options allow you to customize the smoothness of the printed image according to the number of grayscales it uses. The number of gray levels increases by increasing the halftone type and the printer resolution.

See the "Halftones," section in chapter 5, "Additional Technical Information," for more detailed information on halftones and how to change their characteristics via the printer configuration menu.

### Intensity

Sets the intensity for PostScript printing.

| Menu | Administration/Emulations/PostScript/Intensity |
|---|---|
| Choices | Darkest, Darker, Nominal, Lighter, Lightest |
| Default | Nominal |
| Notes | Intensity uses the PostScript settransfer operator's functionality to make the print lighter or darker while maintaining the linearity of the grayscale. |

# Setting PCL 5e Parameters

The PCL 5e menu maintains PCL 5e emulation attributes such as default font, symbol set, and point size. There are ten configuration settings.

### Default Font

Sets the printer's default font.

| Menu | Administration/Emulations/PCL 5E/Default Font |
|---|---|
| Choices | Courier12*, Courier12bold*, Courier12italic*, Courier10*, Courier10bold*, Courier10italic*, Lineprinter, Times*, Times*Italic, Times*Bold, Times*BldItalic, Univ*, Univ*Italic, Univ*Bold, Univ*BldItalic, Univcond*, Univcond*Italic, Univcond*Bold, Univcond*BldItlc, Select By Index |
| Default | Courier12* |
| Notes | Fonts with an asterisk "*" in their names are scalable. Their default point size is set by the Point Size x100 option. Choosing Select By Index as the default font selects the font by the index number printed on the advanced status page and is set through the Default Font Index option. |
|  | » **Note:** *You must use the Select By Index value to select an Intellifont.* |
|  | All lineprinter fonts are bitmap fonts, so they have a fixed point size. Selecting a bound, bitmap font overrides the default settings for symbol set and point size. An unbound font uses the specified default symbol set if possible, and a scalable font uses the default font size. |

### Symbol Set

Selects the default symbol set for the emulation. Not all symbol sets are available with certain resident fonts. In particular, the Desktop, PS

Math, Math 8, Microsoft Pub, Pi Font, PS Text, Ventura Intl, Ventura Math, Ventura US, and Windows symbol sets cannot be used with the resident lineprinter bitmap fonts.

| | |
|---|---|
| **Menu** | Administration/Emulations/PCL 5E/Symbol Set |
| **Choices** | Roman-8, PC-850, PC8-US, PC8-DN, Legal, ISO-4, ISO-6, ISO-11, ISO-15, ISO-17, ISO-21, ISO-60, ISO-69, Desktop, PS Math, Math 8, Microsoft-Pub, Pi-font, PS-Text, Ventura-Intl, Ventura-Math, Ventura-US, Windows, ISO-Latin-1, ISO-Latin-2, ISO-Latin-5, PC-852, PC-8tk, Windows 3.1-1, Windows 3.1-2, Windows 3.1-3, MC-Text |
| **Default** | Roman-8 |
| **Notes** | If a mismatch between symbol set and fonts occurs, the standard PCL font selection mechanism is used to locate a font that matches the selected symbol set. With the standard set of fonts distributed for your printer, this matches the Times* font, but other user-installed fonts could change this result. |

### Lines Per Inch

Sets the default lines printed per inch in PCL jobs, regardless of page size.

| | |
|---|---|
| **Menu** | Administration/Emulations/PCL 5E/Lines/Inch x100 |
| **Choices** | 100 to 4800 |
| **Default** | 0600 |
| **Notes** | You must enter the number of lines per inch times 100. For example, 6 lines per inch is entered as 0600; 6.6 lines per inch is entered as 0660. |

## Line Termination

Indicates the default line termination mode. This setting specifies the treatment of line feeds and carriage returns. (See Appendix C, "Document Option Commands," for more information on line termination).

| Menu | Administration/Emulations/PCL 5E/Line Termination |
|---|---|
| Choices | CR=CR LF=LF<br>CR=CR+LF LF=LF<br>CR=CR LF=CR+LF<br>CR or LF=CR+LF |
| Default | CR=CR LF=LF |

## Point Size x100

Sets the point size for scalable default fonts in units of hundreths of a point. For example, a 24 point default point size is selected by entering 2400. The smallest increment allowed in point size is .25 point (for example, 8.5 point and 8.75 point fonts are allowed, but 8.6 point is not).

| Menu | Administration/Emulations/PCL 5E/Point Size x100 |
|---|---|
| Choices | 00025-99975 (0.25-999.75 points) |
| Default | 01200 (12 points) |
| Notes | If a nonscalable bitmap font is specified, the setting is ignored. |

## Retain Temporary

Allows you to control the PCL 5e print environment across print jobs.

| Menu | Administration/Emulations/PCL 5E/Retain Temporary |
|---|---|
| **Choices** | Off, On, On Compatibility |
| | Off—Resets PCL to its default state at the end of each PCL print job, executes an implicit <ESC>E at the start and end of the job, and deletes any temporary fonts, macros, and patterns. |
| | On—Resets PCL to its default state at the end of each PCL print job. Temporary fonts, macros, and patterns from previous PCL jobs are retained in memory after the print job has completed. You can recall these downloaded fonts, macros, or patterns from within your PCL file without having to download them again. |
| | On Compatibility—Retains the entire state of PCL as well as the temporary macros, fonts, and patterns from previous PCL jobs. |

| Default | Off |
|---|---|
| Notes | A retained state is cleared if you do any of the following:<br><br>■ Explicitly clear the PCL state by sending an <ESC>E or Printer Job Language.<br><br>■ Turn off the printer. (Note that if Retain Temporary is set to On or On Compatibility and power is turned off and back on again, all temporary objects on the disk's standard resource will become permanent. RAM-based temporary objects are lost).<br><br>■ Change any PCL front panel option.<br><br>■ Send any PCL-specific DOC commands (except the DOC emulation command).<br><br>■ Send a PCL job from a different communications port. For example, the state set up by a PCL job using the parallel port is cleared if a subsequent PCL job arrives at the serial port). |

### Default Font Index

Sets the Default Font Index when the Default Font is set to selectbyindex.

| Menu | Administration/Emulations/PCL E/Default Font Idx |
|---|---|
| Choices | 0 to 32767 |
| Default | 00000 |
| Note | The index number can be obtained by the listing printed on the advanced status page. See "Printing a Status Page" on page 4-74, for status page details. |

## Monochrome GL/2

Allows your printer to emulate a monochrome or color plotter.

| Menu | Administration/Emulations/PCL 5E/ Monochrome GL 2 |
|---|---|
| Choices | On, Off |
| | On—Sets the printer to monochrome (2 pen). |
| | Off—Sets the printer to color (8 pen). Since a monochrome print system has two pen colors only (black and white), grayscale patterns are substituted for other colors. |
| | The printer maps each pen to its assigned color, then converts the color to a grayscale using the National Television System Committee (NTSC) color standard for luminosity coefficients (Additive System): |
| | $Y = .3R + .59G + .11B$ |
| | Examples on How to Use the Color Standard Formula |
| | White $\quad Y = [(1*0.3) + (1*0.59) + (1*0.11)]$—100% gray <br> Black $\quad Y = [(0*0.3) + (0*0.59) + (0*0.11)]$—0% gray <br> Red $\quad\quad Y = [(1*0.3) + (0*0.59) + (0*0.11)]$—30% gray <br> Green $\quad Y = [(0*0.3) + (1*0.59) + (0*0.11)]$—59% gray <br> Yellow $\quad Y = [(1*0.3) + (1*0.59) + (0*0.11)]$—89% gray <br> Blue $\quad\quad Y = [(0*0.3) + (0*0.59) + (1*0.11)]$—11% gray <br> Magenta $Y = [(1*0.3) + (0*0.59) + (1*0.11)]$—41% gray <br> Cyan $\quad\quad Y = [(0*0.3) + (1*0.59) + (1*0.11)]$—70% gray |
| Default | On <br> Pen Color Defaults: <br> Pen 0 = White <br> Pen 1 = Black <br> Pen 2 = Red <br> Pen 3 = Green <br> Pen 4 = Yellow <br> Pen 5 = Blue <br> Pen 6 = Magenta <br> Pen 7 = Cyan |

### Download Location

Controls the default storage location of PCL objects (fonts, macros, and patterns) when it is not otherwise specified through DOC commands.

| Menu | Administration/Emulations/PCL 5E/Downld Location |
|---|---|
| **Choices** | Disk—All downloaded PCL objects are stored in the default disk resource, if present.<br>Memory—All downloaded PCL objects are stored in temporary storage in RAM. |
| **Default** | Memory |
| **Notes** | If this is set to memory, before downloading any fonts, macros, or patterns, ensure that the printer has enough memory to do the download. See chapter 2, the "Downloading Disk Fonts" section, for information on increasing printer memory when downloading fonts.<br>DOC commands specifying resources override this option on a per-job basis.<br>If the printer has a large amount of memory, setting this option to Memory enhances printer performance. |

## Setting HP-GL Parameters

This section contains the configuration choices available under Emulations/HP-GL.

## Plotter

Identifies the HP-GL plotter type.

| Menu | Administration/Emulations/HPGL/Plotter |
|---|---|
| **Choices** | 7475A— <br> 7470A— <br> Colorpro— <br> 7550A— <br> DraftMaster—Supports architectural and engineering paper sizes (for example, A to E and Arch A to Arch E). These paper sizes describe a mapping to the physical paper. This mapping is a scaling factor (or a size ratio) between the chosen paper size and the physical paper size in the default inputbin. For example if A3 is selected (size 11.69" x 16.54") for paper size and the physical paper size in the default inputbin is A4 (8.27" x 11.69"), then the plot is scaled by a factor of 2. |
| **Default** | 7550A |

## Scaling Percent

Identifies the percentage to reduce or enlarge an image.

| Menu | Administration/Emulations/HPGL/Scaling Percent |
|---|---|
| **Choices** | 001-150 (1-150%) |
| **Default** | 100 (100%) |

» **Note:** *To scale plots, select the paper size originally used for the plot in the Paper Type menu and then enter the reduction or enlargement needed to fit the plot on the new page in the Scaling Percent menu.*

### Enhanced Mode

Increases the resolution of the grid for downloaded characters. The HP-GL UC (User-defined Character) command allows you to download and draw characters using an encoding scheme consisting of sequences of pen control movements and coordinate sequences. The characters are drawn on a grid that is superimposed on the character plot cell.

| Menu | Administration/Emulations/HPGL/Enhanced Mode |
|------|-----------------------------------------------|
| Choices | On—Standard resolution for fixed- and variable-spaced fonts (4x8 grid). |
|  | Off—Enhanced resolution for variable-spaced fonts (26x36 grid). |
| Default | Off |

### Expand Mode

Defines a larger imageable area which affects the default placement of the scaling points P1 and P2.

| Menu | Administration/Emulations/HPGL/Expand Mode |
|------|---------------------------------------------|
| Choices | On—Turn on expand mode |
|  | Off—Use default scaling points, plotting range, and plotting area. |

| Default | Off |
| --- | --- |
| Notes | The available range of plotter units for a particular paper size is only partially determined by setting the Expand Mode to On. When the printer/plotter senses the paper size it automatically sets the hard clip limit to 15mm on three sides and 39 mm on the fourth. If Expand Mode is On, then the hard clip limits are set to 5mm on three sides and 29 mm on the fourth side. This is what allows you to define a larger imageable area. |
|  | The HP-GL emulation senses the paper type if the paper type is set to Scale to Paper. It is also possible to have the HP-GL emulation use a particular paper size by setting Original Paper Type through the control panel or by using a Document Option Command. |

### Paper Type

Identifies the original image's paper size.

| Menu | Administration/Emulations/HPGL/Paper Type |
| --- | --- |

| Choices | A—(8.5"x 11"—216 x 279 mm),<br>A0—(33.11" x 46.81"—841 x 1189 mm)<br>A1—(23.39" x 3.11"—594 x 1189 mm)<br>A2—(16.54" x 23.29"—420 x 594 mm)<br>A3—(11.69" x 16.54"—297 x 420 mm)<br>A4—(8.27" x 11.69"—210 x 297 mm)<br>B—(11" x 17"—279 x 432 mm)<br>C—(17" x 22"—431.80 x 558.80 mm)<br>D—(22" x 34"—558.80 x 863.60 mm)<br>E—(34" x 44"—863.60 x 1117.60 mm)<br>C ARCH<br>D ARCH<br>E ARCH<br>Scale to Paper |
|---|---|
| Default | Scale to Paper |

### Pen 1 - Pen 8

Sets the width and color for the eight plotter pens. Each pen has a width and a color option available.

» **Note:** *See chapter 5, "Additional Technical Information,"  for more information on the HP-GL emulation color encoding equation.*

| Menu | Administration/Emulations/HPGL/Pen x/Width |
|---|---|
| Choices | 0-60 (0.0-6.0 mm) |
| Default | Pen 1—7 (0.7 mm)<br>Pen 2—3 (0.3 mm)<br>Pen 3—3 (0.3 mm)<br>Pen 4—3 (0.3 mm)<br>Pen 5—3 (0.3 mm)<br>Pen 6—3 (0.3 mm)<br>Pen 7—3 (0.3 mm)<br>Pen 8—3 (0.3 mm) |
| Note | A choice of 0 defaults to one pixel width. |

| Menu | Administration/Emulations/HPGL/Pen x/Color |
|---|---|
| Choices | Black, Blue, Brown, Cyan, Gray-25%, Gray-50%, Gray-75%, Green, Magenta, Orange, Red, Violet, Yellow |
| Default | Pen 1—Black (100% black) |
| | Pen 2—Black (100% black) |
| | Pen 3—Red (70% black) |
| | Pen 4—Green (41% black) |
| | Pen 5—Blue (89% black) |
| | Pen 6—Violet (59% black) |
| | Pen 7—Orange (25.8% black) |
| | Pen 8—Brown (50% black) |

# Setting Line Printer Parameters

The following twelve configuration options are available.

### Font

Sets the printer fonts for the current print job. Any PostScript fonts available on the printer can be used. To see a list of available Post-Script fonts, print an advanced status page through the printer configuration menu.

| Menu | Administration/Emulations/Line Printer/Font |
|---|---|
| Choices | All printer-resident PostScript fonts. |
| Default | Courier |

### Autowrap

Indicates whether long lines are to be wrapped to the next line instead of being truncated.

| Menu | Administration/Emulations/Line Printer/Autowrap |
|---|---|
| Choices | On—Wrap long lines.<br>Off—Truncate long lines. |
| Default | On |

### Character Map

Specifies the type of character map to be used.

| Menu | Administration/Emulations/Line Printer/Character Map |
|---|---|
| Choices | ASCII, EBCDIC |
| Default | ASCII |

### CR IS CRLF

Specifies whether each carriage return (CR) in the print job is translated to a carriage return/line feed (CRLF) combination.

| Menu | Administration/Emulations/Line Printer/CR IS CRLF |
|---|---|
| Choices | On—Translate all carriage returns to line feeds.<br>Off—Use carriage returns only as carriage returns. |
| Default | Off |

### FF is CRFF

Specifies whether each form feed (FF) in the print job is translated to a carriage return/form feed (CRFF) combination.

| Menu | Administration/Emulations/Line Printer/FF IS CRLF |
|---|---|
| Choices | On—Translate all form feeds to carriage return/form feed combinations.<br>Off—Use form feeds only as form feeds. |
| Default | On |

### LF is CRLF

Specifies whether each line feed (LF) in the print job is translated to a carriage return/line feed (CRLF) combination.

| Menu | Administration/Emulations/Line Printer/LF IS CRLF |
|---|---|
| Choices | On—Translate all line feeds to carriage return/line feed combinations.<br>Off—Use line feeds only as line feeds. |
| Default | On |

### Line Numbering

Specifies that a five-digit number is to be prefixed to each line.

| Menu | Administration/Emulations/Line Printer/Line Numbering |
|---|---|
| Choices | On—Number all lines.<br>Off—Don't number lines. |
| Default | Off |

## Lines Per Page

Specifies the number of lines printed on a page before an automatic page eject. Interline spacing is set to the selected point size. Logical pages consisting of more lines than specified are split into multiple pages.

| Menu | Administration/Emulations/Line Printer/Lines per Page |
|---|---|
| Choices | 001-128 |
| Default | 87 |

### Margins

Defines the left, right, top, and bottom margins in 1/7200" increments.

| Menu | Administration/Emulations/Line Printer/Margins |
|---|---|
| Choices | Bottom    0-79200 (0"-11.00")<br>Left       0-79200 (0"-11.00")<br>Right      0-79200 (0"-11.00")<br>Top       0-79200 (0"-11.00") |
| Default | Bottom    0<br>Left       0<br>Right      0<br>Top       0 |
| Note | The margins are in 1/7200" increments (79200 is 11.00" at 7200 increments). |

### Orientation

Specifies whether text and graphics are placed on the page in a portrait or landscape orientation.

| Menu | Administration/Emulations/Line Printer/Orientation |
|------|---------------------------------------------------|
| Choices | Landscape, Portrait |
| Default | Portrait |

### Point Sz 100ths

Sets the five-digit value used to specify the point size of the font for the current print job.

| Menu | Administration/Emulations/Line Printer/Point Sz 100ths |
|------|--------------------------------------------------------|
| Choices | 00000-99999 |
| Default | 00880 (8.8 points) |

### Tab Stops

Specifies the number of spaces between tab stops.

| Menu | Administration/Emulations/Lineprinter/Tab Stops |
|------|-------------------------------------------------|
| Choices | 000-256 |
| Default | 8 |

# Special Pages

Use the Administration/Special Pages menu to print special pages, such as status pages, calibration page, header pages, and trailer pages.

# Working with Status Pages

Printing a status page is a two-step procedure: Identify the type of status page you want to print, and then print it.

## Identifying a Status Page Type

Two types of status pages are available.

| Menu | Administration/Special Pages/Status Page Type |
|---|---|
| Choices | Standard—Lists printer identification information, current memory configuration, timeouts, communication settings, input buffer sizes, and available fonts. |
| | Advanced—Contains the same information as the standard status page as well as configuration menu settings, fonts, and downloaded emulations. |
| Default | Standard |

## Printing a Status Page

After you have identified the type of status page to print, use the Status Page button on the printer control panel to print it.

» **Note:** *If you choose an advanced status page but only a standard status page prints, the printer has run out of RAM. Either reallocate memory among the memory clients (see chapter 5, "Additional Technical Information," ) or consider adding more memory to the printer.*

# Printing a Calibration Page

Prints a calibration page.

| Menu | Administration/Special Pages/Calibration Page |
|---|---|
| Choices | Yes—Prints calibration page. |
| | No—Calibration page will not be printed. |

| Default | Yes |
|---|---|
| Notes | See the Administration/Engine/Image Alignment menu for calibration instructions. |

# Working with Header Pages

A header page is a separator page that prints before a print job to help users sort their jobs. The information on the header page can be customized. See the *QMS Crown Document Option Commands* manual on the *QMS Software Utilities* CD-ROM for more information.

## Enabling/Disabling Header Pages

| Menu | Administration/Special Pages/Header Page |
|---|---|
| Choices | On—Print a header page before each job.<br>Off—Don't print a header page before each job. |
| Default | Off |

## Identifying a Header Page Input Source

You can select the input bin (tray) from which the printer pulls paper when printing the header page.

| Menu | Administration/Special Pages/Header Inputbin |
|---|---|
| Choices | Upper—Pull header page paper from the upper input bin.<br>Middle—Pull header page paper from the middle input bin.<br>Lower—Pull header page paper from the lower bin. |

| Default | Upper |
|---------|-------|
| Notes | If you used the Administration/Engine/Inputbin *x* Name options to change the names of the input bins, these names replace Upper, Middle, and Lower in the message window. |

# Working with Trailer Pages

A trailer page is a separator page that prints after a print job to help users sort out their jobs and, if requested, identify print job errors.

## Enabling/Disabling Trailer Pages

| Menu | Administration/Special Pages/Trailer Page |
|------|-------------------------------------------|
| Choices | Off—Don't print a trailer/error page for each print job. On—Print a trailer/error page for each print job. On Error—If any print job errors exist, print a trailer page that lists the errors as well as other trailer page information. Errors Only—If any print job errors exist, print a trailer page that lists the errors but omits other trailer page information. |
| Default | Off |
| Notes | See the *QMS Crown Document Option Commands* manual for more information. |

### Identifying a Trailer Page Input Source

You can select the input bin (tray) from which the printer pulls paper when printing the trailer page.

| Menu | Administration/Special Pages/Trailer Inputbin |
|------|-----------------------------------------------|
| **Choices** | Upper—Pull trailer page from the upper input bin. |
| | Middle—Pull trailer page from the middle input bin. |
| | Lower—Pull header page from the lower bin. |
| **Default** | Upper |
| **Notes** | If you used the Administration/Engine/Inputbin *x* Name options to change the names of the inputbins, these names replace Upper, Middle, and Lower in the message window. |

# Printer Start-Up Options

The Administration/Startup Options menu allows you to configure your printer to run certain options automatically when you turn it on.

## Enabling/Disabling the Start-Up Page

By default, the printer prints a start-up page when you turn it on. The start-up page lists basic information about the printer, such as its

name, the PostScript version, and various printer settings. However, you can turn the start-up page off to conserve paper and toner.

| Menu | Administration/Startup Options/Do Start Page |
|---|---|
| **Choices** | Yes—Print a start-up page each time the printer is turned on.<br>No—Don't print a start-up page each time the printer is turned on. |
| **Default** | Yes |
| **Notes** | If you used the Administration/Engine/Inputbin *x* Name options to change the names of the input bins, these names replace Upper, Middle, Lower, and Optional in the message window. |

## Enabling/Disabling the SYS\START File

If you have a hard disk and Do Sys Start is enabled, when the printer is turned on, the controller checks the hard disk for a PostScript file named SYS\START and executes this file.

| Menu | Administration/Startup Options/Do Sys Start |
|---|---|
| **Choices** | Yes—Check the hard disk for and execute the SYS\START file when the printer is turned on.<br>No—Don't check the hard disk for a SYS\START file. |
| **Default** | Yes |
| **Notes** | This file does not print. Information on creating a SYS\START file is available via Q-FAX (see appendix A, "QMS Customer Support," for information on using Q-FAX). |

## Loading the PostScript Error Handler

Error Handler is a diagnostic tool that identifies PostScript errors encountered during a print job.

| | |
|---|---|
| **Menu** | Administration/Startup Options/Do Error Handler |
| **Choices** | Yes—Load the Error Handler at power on. <br> No—Don't load the Error Handler. |
| **Default** | No |
| **Notes** | You must restart the printer before this change will take effect. <br> Refer to the *PostScript Language Reference Manual* (Adobe Systems Incorporated, Reading, PA: Addison-Wesley, 1990, ISBN 0-201-18127-4) for more information on PostScript errors. |

# Memory

This submenu allows you to allocate the printer's memory (RAM) among the various memory clients. The flexibility of defining memory available to clients allows experienced users to optimize the printer's performance according to a given set of conditions.

This section briefly describes each of the memory submenus and the memory clients. See chapter 5, "Additional Technical Information," for more detailed information on the printer's memory and what benefits, if any, may result from adding memory to each client.

To find out how memory is currently allocated, print a status page using the Print Status button on the control panel or check each client individually in the configuration menu.

# Manual Configuration Menu

The manual configuration menu allows you to finely adjust memory clients to your particular printing needs.

## Configuring Spooling

The K Mem for Spool, listed on the status page as Host Input, is the total number of kilobytes of RAM allocated to all spooling buffers. This memory client stores incoming data from the various interfaces until it is processed and printed.

| Menu | Administration/Memory/Manual Config/K Mem for Spool |
|---|---|
| Choices | 00128-30720 |
| Notes | This value must be greater than the sum of the Min K Spool for all installed and enabled interfaces.The maximum value listed depends on the amount of memory installed. |
| | If you change the K Mem for Spool value, the printer automatically restarts after you save your changes and exit from the configuration menu. |

When the sum of the Min K Spool for all interfaces is less than K Mem for Spool, memory is allocated as follows:

1   Interfaces with Min K Spool (in the Administration/Communications menu) value greater than zero receive their specified allocation.

2   The remaining memory in K Mem for Spool is allocated to Shared Spooling Space. This can be seen in the Communications Settings & Input Buffer Sizes area of the status page.

3   The Shared Spooling Space can be allocated to any of the communication interfaces if the input jobs require more spooling space. The limit to this is the amount of Host Input (K Mem for Spool) shown on the status page.

» **Note:** *If you add the Input Buffer Sizes allocated to each interface and the Shared Spooling Space, the result should equal Host Input.*

## PostScript Heap

The K Mem for PSHeap, listed on the status page as Heap, is the number of kilobytes of RAM dedicated to the PostScript emulation interpreter. This memory client holds downloaded PostScript emulation fonts, operators, and forms.

| Menu | Administration/Memory/Manual Config/K Mem for PSHeap |
|---|---|
| Choices | 01280-no maximum |
| Notes | If you change the K Mem for PSHeap value, the printer automatically restarts after you save your changes and exit from the configuration menu. The maximum value listed depends on the amount of memory installed. |

## PostScript Fonts

The K Mem for PS Fonts, listed on the status page as Font Cache, is the number of kilobytes of RAM dedicated to caching previously scaled bitmap representations of fonts for the PostScript emulation interpreter.

| Menu | Administration/Memory/Manual Config/K Mem for PS Fonts |
|---|---|

| Choices | 00088-05120 |
|---------|-------------|
| Notes | This memory setting can reduce the number of times a PostScript font must be converted from outline form to bitmap form, thus reducing processing time. The maximum value listed depends on the amount of memory installed. |
| | If you change the K Mem for PS Fonts value, the printer automatically restarts after you save your changes and exit from the Configuration menu. |

### Emulation

The K Mem Emulation, listed on the status page as Emulation, is the number of kilobytes of RAM to be used by non-PostScript emulations for temporary storage and for loading optional emulations.

| Menu | Administration/Memory/Manual Config/K Mem Emulation |
|------|------------------------------------------------------|
| Choices | 01024-no maximum |
| Notes | If you receive an emulation error, you may need to increase the amount of memory for this client.The maximum value listed depends on the amount of memory installed. |
| | If you change the K Mem Emulation value, the printer automatically restarts after you save your changes and exit from the configuration menu. |

### Emulation (Temporary)

The K Mem Emul Temp, listed on the status page as Emulation Temporary, is the number of kilobytes of RAM to be used by non-Post-

Script emulations for storing downloaded (soft) fonts, forms, or macros.

| Menu | Administration/Memory/Manual Config/K Mem Emul Temp |
|---|---|
| Choices | 00256-30720 |
| Notes | This value must be greater than the sum of the Min K Spool for all installed and enabled interfaces. Data in this client disappears when the printer is turned off. Increasing this client's size increases the number of PCL downloaded fonts which can be accepted.The maximum value listed depends on the amount of memory installed.<br><br>If you change the K Mem Emul Tmp value, the printer automatically restarts after you save your changes and exit from the Configuration menu. |

## Display List

The K Mem Display is the number of kilobytes of RAM dedicated to the display lists. The display list holds the intermediate representation of pages to be printed. Increasing the size of the Display List increases the number of pages that can be collated. The maximum number of pages that can be collated is 100 pages.

| Menu | Administration/Memory/Manual Config/K Mem Display |
|---|---|
| Choices | 00384-no maximum |
| Notes | The maximum value listed depends on the amount of memory installed. If you change the K Mem Display value, the printer automatically restarts after you save your changes and exit from the configuration menu. |

### Disk Cache

The K Mem Disk Cache is the number of kilobytes of RAM dedicated to the disk cache. This memory client speeds file system throughput on any installed hard disks by storing frequently used data in system memory instead of continually storing it to and retrieving it from a hard disk.

| Menu | Administration/Memory/Manual Config/K Mem Disk Cache |
|---|---|
| **Choices** | 00000-30720 |
| **Default** | 00256 |
| **Notes** | If you change the K Mem Disk Cache value, the printer automatically restarts after you save your changes and exit from the configuration menu. |

The amount of memory needed for this memory client depends on the size and number of hard disks, the number of subdirectories on each disk, and the amount of memory dedicated to caching.

» **Note:** *If sufficient memory is available to the disk cache, all disks are accessible. If insufficient memory is available to the disk cache, some disks may be accessible while others may not be.*

The recommended amount of memory for the disk cache client is

■ 120 KB minimum

■ 0.5 KB per MB of disk storage total for all disks

For example, the recommended amount of memory for the disk cache for a single 120 MB hard disk is 180 KB, and for two 120 MB hard disks it is 240 KB. These are recommended values. The printer will still operate with a smaller cache, but decreased performance may result.

### Frame Buffer

The Frame Buffer memory client holds rasterized or bitmapped images of page faces which are ready to be sent to the print engine. A

frame holds the contents of each single page image. For example, a 600 dpi page printed on letter size paper would consume frame buffer memory space as follows: (600dpi x 600dpi x 8.5" x 11")/8 = 4,207,500 bytes or 4.1 M.

Frame buffer memory should always be the first memory client that is configured in the printer. After this, all other clients can be configured depending on your printing needs. Anytime the frame buffer client is changed, all of the other clients will be resized to their default values. Frame buffer can be configured manually or by resetting the printer defaults. In all cases, be sure to keep a copy of the status page as a record of memory client settings. See chapter 5, "Additional Technical Information," for more information on memory and the frame buffer client.

| Menu | Administration/Memory/Manual Config/K Mem Frame Buffer |
|---|---|
| Choices | 02200-104532 |

## Printer Memory

MB Printer Mem, listed as Total Memory on the status page, is the number of megabytes of RAM available to be split among the various memory clients. The size of this client's memory limits the number of jobs that may be queued simultaneously. When this client's memory is exhausted, the printer slows down, and the hosts are forced to wait.

| Menu | Administration/Memory/Manual Config/MB Printer Mem |
|---|---|
| Choices | 000-999 |
| Default | Depends on the amount of memory installed. |
| Notes | This memory client is not user-configurable.<br>Since the printer uses a portion of the hard disk for memory swapping, the amount of memory displayed is larger than the actual amount of memory installed in the printer. |

# Engine

Through the Administration/Engine menu you can set print engine-related parameters.

## Adjusting the Image Alignment

This option allows you to adjust the horizontal and vertical placement of printed images.

To check image alignment, print a standard status page (Print Status button). When the printer is placing images properly, the alignment angle bar in the lower-left corner of the status page is 0.5"/12.7 mm from the left and bottom edges of the page. If the angle bar is off, use the Administration/Engine/Image Alignment option to align the image horizontally and vertically in pixel increments (1/300" or 0.08 mm).

» **Note:** *Engine constraints may limit the accuracy of pixel alignment.*

### Horizontal Offset

| Menu | Administration/Engine/Image Alignment/Horiz Offset |
|---|---|
| Choices | 000-300 (0.00"/0 mm-1.00"/25.4 mm) |
| Default | 100 (0.33"/.84 mm) |
| Notes | Values above 100 move the image to the right. Values below 100 move the image to the left. |

### Vertical Offset

| Menu | Administration/Engine/Image Alignment/Vertical Offset |
|---|---|
| Choices | 000-300 (0.00"-1.00") |

| Default | 100 (0.33"/.84 mm) |
|---------|--------------------|
| Notes   | Values above 100 move the image down. Values below 100 move the image up. |

### Duplex H. Offset

| Menu    | Administration/Engine/Image Alignment/Duplex H. Offset |
|---------|--------------------|
| Choices | 000-300 (0.00"/0 mm-1.00"/25.4 mm) |
| Default | 100 (0.33"/.84 mm) |
| Notes   | Values above 100 move the image to the right. Values below 100 move the image to the left. |

### Duplex V. Offset

| Menu    | Administration/Engine/Image Alignment/Duplex V. Offset |
|---------|--------------------|
| Choices | 000-300 (0.00"-1.00") |
| Default | 100 (0.33"/.84 mm) |
| Notes   | Values above 100 move the image down. Values below 100 move the image up. |

## Setting Default Paper

The default paper size is used when the selected paper size is requested but the input tray is missing from the engine.

| Menu    | Administration/Engine/Default Paper |
|---------|--------------------|
| Choices | Letter, A4 |
| Default | Letter |

# Setting Inputbin x Name

These options are used to name inputbins 1, 2, 3, and 5.

| Menu | Administration/Engine/Inputbin x Name |
|---|---|
| **Choices** | Up to 16 alphanumeric characters |
| **Default** | Inputbin 1 "upper" / Inputbin 2 "middle"/ Inputbin 3 "lower"/Inputbin 5 "LCIF" |
| **Note** | The inputbin 5 option appears only if the optional large-capacity input feeder (LCIF) is installed. |

# Setting Outputbin x Name

These options are used to name output bins 1, 2, and 3.

| Menu | Administration/Engine/Outputbin x Name |
|---|---|
| **Choices** | Up to 16 alphanumeric characters |
| **Default** | Outputbin 1 "upper"/ Outputbin 2 "face-up stack"/ Outputbin 3 "face-down stack" |
| **Note** | The outputbin 2 and outputbin 3 options appear only if the optional LCOS is installed. |

## Specifying Page Recovery Action

When a paper jam or other similar error occurs, the printer can reprint the job starting from the page on which the jam occurred.

| Menu | Administration/Engine/Page Recovery |
|---|---|
| Choices | On—Reprints a print job from the page on which the jam or error occurred.<br><br>Off—Don't reprint a print job when a jam or error occurs. |
| Default | On |

## Setting Toner Low Action

You can configure the printer to stop or to continue printing when a TONER LOW error message is displayed in the message window.

| Menu | Administration/Engine/Toner Low Act. |
|---|---|
| Choices | Continue—Continue printing when a TONER LOW message displays.<br><br>Stop—Stop printing when a TONER LOW message displays. |
| Default | Continue |

## Setting Energy Conservation

The Energy Saver option specifies whether the printer changes to a low-power state (the engine remains on, but the fuser turns off) after

the printer is inactive for a user-defined length of time. When a print job is received, the printer returns to normal power within 90 seconds.

| Menu | Administration/Engine/Energy Saver |
|---|---|
| **Choices** | 15 minutes, 30 minutes, 1 hour, 2 hours, 3 hours—Idle time before activation of low-power state.<br><br>Off—Use normal power all of the time. |
| **Default** | 1 hour |

## Setting Default Resolution

This option sets the print engine's default resolution.

| Menu | Administration/Engine/Def. Resolution |
|---|---|
| **Choices** | 300 dpi—300x300 dpi resolution.<br>600 dpi—600x600 dpi resolution. |
| **Default** | 600 dpi |

# Setting Toner Density

Print density is the amount of toner placed on each dot, making the print appear lighter or darker. The higher the density, the darker the print looks and the higher the contrast is on the page.

» **Note:** *If the print density is too light, make sure that the Administration/Engine/Print Quality/Normal option is turned on before making any adjustments. The Conserve Toner option saves toner by simulating draft-quality printing.*

| Menu | Administration/Engine/Toner Density |
|---|---|
| **Choices** | <table><tr><td>L          D<br>......^..\|.....</td><td>—This is a scale that moves left or right with the Previous and Next buttons</td></tr><tr><td>L          D<br>\|.....^........</td><td>—The lightest available setting</td></tr><tr><td>L          D<br>......^.......\|</td><td>—The darkest available setting</td></tr></table> |
| **Note** | A vertical bar moves left or right towards L (Light) or D (Dark). |

# Rotate Simplex

Use Administration/Engine/Rotate Simplex to select rotate simplex.

| Menu | Administration/Engine/Rotate Simplex |
|---|---|
| **Choices** | No, Yes |
| **Default** | No |

## Letterhead

Use Administration/Engine/Letterhead to select letterhead.

| Menu | Administration/Engine/Letterhead |
|------|----------------------------------|
| Choices | Off, On |
| Default | Off |

## Print Quality

The Print Quality option allows the printer to operate at a lower rate of toner consumption and extend the life of your toner bottles.

| Menu | Administration/Engine/Print Quality |
|------|-------------------------------------|
| Choices | Normal—Normal toner use.<br>Conserve Toner—Toner use is lowered. |
| Default | Normal |

# Consumables

This group of menu configurations is necessary for performing certain maintenance procedures on your printer. You will need to access this menu whenever you have to add toner, developer, replace the fuser, replace the drum, and replace rollers.

▲ **Caution:** *Failure to configure the consumable menus when performing maintenance on your printer can result in poor printer performance or printer failure.*

# Changing the Developer

This menu prompts you through the changing developer procedures. See chapter 2, "Consumables," in the *Operations* manual for the procedure and illustrations on changing the developer.

| Menu | Administration/Consumables/Developer |
|---|---|
| **Choices** | No, Yes |

| Default | No |
|---------|-----|
| Notes | When you select Yes the message window displays: |
| | `OPEN UPPER RIGHT` |
| | `DOOR` |
| | After you open the door the message window displays |
| | `WASTE BOTTLE IN?` |
| | `SELECT WHEN DONE` |
| | After you check the waste bottle, close the door, and press select the message window displays |
| | `PURGING` |
| | `DEVELOPER....` |
| | The developer purge will last about 30 seconds and the message window displays |
| | `OPEN UPPER RIGHT` |
| | `DOOR` |
| | After you open the door the message window displays |
| | `FILL DEVELOPER` |
| | `SELECT WHEN DONE` |
| | After you have filled the developer, and pressed Select the message window displays |
| | `INSERT BOTTLE` |
| | `SELECT WHEN DONE` |
| | This is your prompt to insert the developer waste bottle and press Select. |

# Replacing the Drum

This menu prompts you through replacing the drum procedures. See chapter 2, "Consumables," in the *Operations* manual for the procedure and illustrations on replacing the drum.

| Menu | Administration/Consumables/Drum Unit |
|---|---|
| **Choices** | No, Yes |
| **Default** | No |
| **Notes** | When you select Yes, the message window displays<br>REPLACE DRUM UNIT<br>SELECT WHEN DONE<br>When you select Yes, again the message window displays<br>REPLACE CHARGER<br>SELECT WHEN DONE |

# Replacing the Fuser

This menu prompts you through replacing the fuser procedures. See chapter 2, "Consumables," in the *Operations* manual for the procedure and illustrations on replacing the fuser.

| Menu | Administration/Consumables/Fuser |
|---|---|
| **Choices** | No, Yes |
| **Default** | No |
| **Notes** | When you select Yes, the message window displays<br>REPLACE FUSER<br>SELECT WHEN DONE |

# Replacing the Pick-Up Rollers

This menu prompts you through replacing the pick-up roller. See chapter 2, "Consumables," in the *Operations* manual for the procedure and illustrations on replacing the pick-up rollers.

| Menu | Administration/Consumables/Pick Unit 1 |
|---|---|
| Choices | No, Yes |
| Default | No |
| Notes | This menu is selected when you replace the pick-up roller on the **upper** tray.<br><br>When you select Yes, the message window displays<br>`REPLACE PICK 1`<br>`SELECT WHEN DONE` |

| Menu | Administration/Consumables/Pick Unit 2 |
|---|---|
| Choices | No, Yes |
| Default | No |
| Notes | This menu is selected when you replace the pick-up roller on the **middle** tray.<br><br>When you select Yes, the message window displays<br>`REPLACE PICK 2`<br>`SELECT WHEN DONE` |

| Menu | Administration/Consumables/Pick Unit 3 |
|---|---|
| **Choices** | No, Yes |
| **Default** | No |
| **Notes** | This menu is selected when you replace the pick-up roller on the **lower** tray.<br><br>When you select Yes, the message window displays<br>`REPLACE PICK 3`<br>`SELECT WHEN DONE` |

| Menu | Administration/Consumables/LCIF Pick Unit |
|---|---|
| **Choices** | No, Yes |
| **Default** | No |
| **Notes** | This menu is selected when you replace the pick-up roller on the optional **LCIF** tray. This menu appears only if the LCIF is installed.<br><br>When you select Yes, the message window displays<br>`REPLACE PICK LCIF`<br>`SELECT WHEN DONE` |

### Resetting All Consumables Statistics Counters

| Menu | Operator Control/Consumables/Start Period |
|---|---|
| Purpose | Allows you to reset all counters for the user-defined consumables tracking period to 0. |
| Choices | No—Don't reset counters to 0 |
| | Yes—Reset counters to 0 |
| Default | No |

# Miscellaneous

The Miscellaneous submenu allows you to change printer configurations, such as defaults and message window language.

## Save Defaults

Use Administration/Miscellaneous/Save Defaults to save your defaults.

| Menu | Administration/Miscellaneous/Save Defaults |
|---|---|
| Choices | No, Yes |
| Default | No |

# Restoring the Factory Default Configuration

If you need to cancel all of the configuration changes you have made, you can reset all of the configuration settings to their factory defaults or custom defaults.

| Menu | Administration/Miscellaneous/Restore Defaults/ Factory Defaults or Custom Defaults |
|---|---|
| **Choices** | Yes, No |
| **Default** | No |
| **Notes** | When you choose Yes, the printer automatically reboots. This process takes several minutes to complete. |

# Working with Custom Configurations

See "Saving a Default Configuration," on pages 4-14 and 4-15 for information on working with custom configurations.

# Reboot System

You can use this selection to restart the printer without turning off the power switch. You would use this when you've made changes to the configuration and need to restart the printer before the new settings will be acknowledged.

| Menu | Administration/Miscellaneous/Reboot System |
|---|---|
| **Choices** | Yes, No |
| **Default** | No |

# New System Image

The system software in your printer is stored on the internal hard drive. This allows you to update the system software from the host computer.

| Menu | Administration/Miscellaneous/New System Image |
|------|-----------------------------------------------|
| **Choices** | Yes, No |
| **Default** | No |
| **Notes** | The procedures for downloading a new system image are in chapter 9, "Troubleshooting Printer Problems," in the *Operations* guide. |

# Capture Printjob

This allows you to capture the next job received by the printer and store it to the printer's memory. To access the captured print job you must copy the file from the printer's memory system (memory includes the printer's hard disk). Copy the captured file from

```
SYS:/USR/LOGFILE.DAT
```

| Menu | Administration/Miscellaneous/Capture Printjob |
|------|-----------------------------------------------|
| **Choices** | Disable, Capture Nextjob, Del Capturedjob |
| **Default** | Disable |
| **Notes** | If the print job is larger than the available space on the hard disk, the job will be flushed. The captured print job will remain on the disk until it is deleted with the Del Capturedjob menu option or it is overwritten when another print job is captured. |

# Setting the Message Window Language

Status messages and configuration menus can be displayed in the message window in English, French, German, or Spanish.

| | |
|---|---|
| **Menu** | Administration/Miscellaneous/Keypad Language |
| **Choices** | English, French, German, Spanish |
| **Default** | English |
| **Notes** | The printer must be restarted for changes to the Keypad Language menu to take effect. You can either let the printer restart automatically after you save the change and exit from the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer. |

# Clock Operations

This menu allows you to set the internal real-time clock and adjust its speed.

| | |
|---|---|
| **Menu** | Administration/Miscellaneous/Clock Operations/ Set Clock |
| **Choices** | Current Value: MON 20 JUL 1998 13:00:00<br>Enter Value: |
| **Default** | Current time and date |

| | |
|---|---|
| **Menu** | Administration/Miscellaneous/Clock Operations/ Adjust Clock |
| **Choices** | -155 SEC/MONTH to +155 SEC/MONTH |
| **Default** | 0 SEC/MONTH |

# Hard Disks

Use the Administration/Disk Operations menu to format the internal hard disk or connected hard disks.

See the *Options* manual for more information on installing external hard disks.

---

▲ **Caution**: *If you connect to this printer an external hard disk you previously used with an earlier QMS Crown printer (QMS 1660E, QMS 1725E, QMS 2025, or QMS 3225 ), this QMS 4060 Print System software release will automatically reorganize the files on the hard disk when the printer is turned back on again. (The printer release number is listed on both the start-up and the status page.) Once this reorganization is done, the files on the hard disk can no longer be accessed if the hard disk is reattached to an earlier QMS Crown printer.*

*This reorganization process takes time. If, when you first turn the printer on after attaching a previously used hard disk, it does not come on line immediately, be patient. Interrupting the reorganization process could cause all files on the hard disk to be lost.*

---

## Formatting a Hard Disk

Use the Administration/Disk Operations/Format Disk menu to format a hard disk.

| Menu | Administration/Disk Operations/Format Disk |
|---|---|
| Choices | Dsk#0 - Dsk#4, Dsk#6, Dsk#7 |
| Default | Dsk#7 |
| Notes | Dsk#5 is reserved for the CrownCopy option. Dsk#7 belongs to the internal hard disk. This disk contains all the printer system code and if formatted will cause the printer to not function. Do not format Dsk#7 unless you are troubleshooting a disk problem. See Chapter 9, "Troubleshooting Printer Problems," in the *Operations* manual for more information. |
| | Refer to chapter 1, "Memory and Storage," in the *Options* manual for complete information on backing up data to a Jaz or Zip Drive and restoring data from a Jaz or Zip Drive. |

## Backing up a Hard Disk

Use the Administration/Disk Operations/Backup Hard Disk to backup a hard disk.

| Menu | Administration/Disk Operations/Backup Hard Disk |
|---|---|
| Purpose | Allows you to back up all the files stored on a storage device |
| Choices | DSK7 Full, DSK7 Incremental |
| Default | DSK#7 Full |
| Notes | DSK#5 is reserved for the CrownCOpy option. Dsk#7 is the internal hard disk. |

Refer to chapter 1, "Memory and Storage," in the *Options* manual for complete information on backing up data to a Jaz or Zip Drive and restoring data from a Jaz or Zip Drive.

## Restore Disk

Use Administration/Disk Operations/Restore Disk to restore your disk.

| Menu | Administration/Disk Operations/Restore Disk |
|---|---|
| **Choices** | DSK7 |
| **Default** | DSK7 |
| **Note** | There is only one selection available |

Refer to chapter 1, "Memory and Storage," in the *Options* manual for complete information on backing up data to a Jaz or Zip Drive and restoring data from a Jaz or Zip Drive.

# Installation Menu

The Installation menu appears only if a security key is installed. The system administrator uses the Installation menu to set passwords for the Operator Control and Administration menus.

## Operator Password

Allows you to enter a password used to enter the Operator menu when enabled.

| Menu | Installation/Operator Passwrd |
|---|---|
| **Choices** | Up to 16 alphanumeric characters |

| Default | Blank (no password) |
|---------|---------------------|
| Notes | Enable the password in the Installation/Use Operator Pwd menu. |

## Use Operator Password

Determines if a password is required to enter the Operator menu.

| Menu | Installation/Use Operator Pwd |
|---------|---------------------|
| Choices | On—Requires a password to enter the Operator Control menu. Off—No password required to enter the Operator Control menu. |
| Default | Off |
| Notes | Enter the password in the Installation/Operator Passwrd menu. |

## Admin Password

This represents the password used to enter the Administration menu when enabled.

| Menu | Installation/Admin Password |
|---------|---------------------|
| Choices | Up to 16 alphanumeric characters |
| Default | Blank (no password) |
| Notes | Enable the password in the Installation/Use Admin Pwd menu. |

## Use Admin Password

Determines if a password is required to enter the Administration menu.

| Menu | Installation/Use Admin Pwd |
|---|---|
| Choices | On—Require a password to enter the Administration menu. |
| | Off—Don't require a password to enter the Administration menu. |
| Default | Off |
| Notes | Enter the password in the Installation/Admin Password menu. |

## Using Passwords

When a password is required to enter the Operator Control or Administration menu, the message window displays

```
ENTER PASSWORD
```

if you press the Select button to enter the menu. Enter the password or press the Menu button to return to the menu.

If you specify the correct password, access to the selected menu is granted. However, if you enter an invalid password, the message window flashes

```
INVALID PASSWORD
```

for three seconds and then returns you to the Configuration menu.

» **Note:** *Password protection from the menu does not prevent access from CrownAdmin 3 if the CrownAdmin utility password is used.*

# Configuring Optional Features

Several of the optional features available affect printer configuration and the Configuration menu. When an optional feature is installed, its configuration information merges into the Configuration menu. See the *Options* manual for more information.

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# 5

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# Additional Technical Information

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# In This Chapter . . .

# Introduction

This chapter provides additional technical information on memory management, end job mode, the PS Protocol option, and HP-GL color-to-grayscale conversion.

# Printer-Host Communication

## Interface

An interface is the point at which two elements connect so they can work together. A printer-host interface is the way a printer connects to and works with a host (a microcomputer, workstation, minicomputer, mainframe computer, or network), and it involves both hardware and software. The way your printer interfaces with a host depends on many things, including computer type, computer ports available, interface cabling, application software, printer emulations, and printer drivers.

## Simultaneous Interface Operation (SIO)

Simultaneous Interface Operation (SIO), a standard feature of QMS Crown architecture, enables your QMS 4060 Print System to communicate simultaneously with hosts through the parallel, optional serial, Ethernet, and optional interface ports. In other words, SIO allows you to have more than one host communicating with the printer at one time.

## ESP Technology

Emulation Sensing Processor (ESP) technology is another standard feature of QMS Crown architecture. ESP technology, which works with most popular commercially available applications, uses a form of artificial intelligence to analyze incoming file data and select the appropriate printer emulation (for example, PostScript emulation,

HP-GL emulation, HP-PCL emulation, or another optional emulation) from those installed on the printer.

The print job is processed without your having to change printer switch settings or send software commands to accommodate different printer emulations.

When your printer is in ESP mode, you can easily print files prepared for a PostScript printer, an HP LaserJet, or an HP-GL plotter. The file prints correctly as long as it contains the traditional PostScript or HP-GL commands for such items as page formats and job parameters (number of copies, page margins, fonts).

The QMS 4060 Print System prints almost any file sent in a language ESP technology understands, whether you have one, two, or more hosts, and whether you are communicating through a parallel, Ethernet, optional serial, or other optional interface. Most users never have to change from ESP mode to another mode.

## Communication Modes

You can either allow your printer to operate in its default ESP mode or configure its ports to accept jobs in only a particular emulation mode (for example, PostScript emulation only, HP PCL only, or HP-GL emulation only). The default printer communication settings can be changed through the Configuration menu, which you access through the control panel—in the Administration/Communications menu, you can choose a default emulation for the parallel and optional serial interfaces, and in the Administration/Emulations menu, you can configure the printer defaults for each emulation mode. (The optional LocalTalk interface uses only PostScript.)

Advanced users can also use PostScript operators to reconfigure printer ports. Generally, it is best to keep your printer in ESP mode. Since ESP mode is the factory default, all you have to do to use it initially is connect your host and printer and then send a file.

If you do want to reconfigure the interface ports for specific emulations (or if you need to return the printer to ESP mode), use the printer's control panel (the Administration/Communications menu).

Configuring the printer through the control panel is described in chapter 4, "Printer Configuration," of this manual.

# Halftones

The ability of the printer to produce halftones allows you to add scanned images or halftone graphics to your documents. This section will explain some of the options available on the QMS 4060 for halftone printing.

## What are Halftones?

Continuous tone scanned images have to be converted to dot pattern images on a laser printer. Laser printers, like printing presses, only have the ability to print patterns of dots controlled by turning on and off the laser. Because of the limited resolving power of the eye halftones appear as continuous tone images. For an example hold a newspaper photograph very close to your eyes to see the halftone dots.

Halftone characteristics can be changed by settings available on your QMS 4060 Print System. The following factors can be used to adjust the halftone characteristics of your documents.

■ Printer resolution

■ Screen frequency and screen angles (Halftone types)

There can be some side effects to changing these factors. Factors such as the number of gray levels, printer performance, and scanned image quality can be affected.

## Gray Levels

Gray levels are a progressive series of gray tones between black and white. Gray levels are produced by varying the ratio of black to white halftone dots. The number of gray levels depends on printer resolution and screen frequency.

## Screen Frequency

Screen frequency or Lines Per Inch (LPI) is the number of lines of halftone dots that compose each inch of a halftone screen. The screen frequency determines the number of halftone dots used to represent gray levels in a given area.

The following formula shows the relationship between screen frequency, print resolution and gray levels. As the screen frequency increases, the number of gray levels decrease. If resolution is increased, the number of gray levels will also increase.

- gray levels = (resolution/screen frequency)$^2$ + 1

You can change screen frequency by selecting the halftone type in the QMS 4060 configuration menu, through your application, or by using the PostScript **setscreen** operator.

The extra gray levels available through higher resolution provide a smoother shift from the darkest black to very light grays.

## Screen Angle

A screen angle is the angle at which a halftone screen prints. The default screen angle for your QMS 4060 Print System is 45° at 300x300, and 600x600. This is the normal angle for black and white printers. Selecting advanced halftone types menu option will vary the screen angle. You can also change the screen angle through the PostScript **setscreen** operator.

### Halftone Types

Your printer provides three different options for halftones—basic, standard, and advanced. The number of gray levels increases by increasing the halftone type setting and the printer resolution.

» **Note:** *The default for this menu is Standard. The standard settings are optimized for performance. The advanced settings are optimized for quality.*

# A Special Note for QuarkXPress Users

Make sure you have installed the 4060 PDFs in the PDF folder in the QuarkXPress folder. The name of the PDF is

■ QMS4060.PDF

To select the PDF, go to the Page Setup dialog box in QuarkXPress, and hold down the Shift key while clicking the Printer Type list box. (The italicized selections are PPDs, and the non-italicized selections are PDFs.) The PPD will allow you to access the halftone settings.

### Enhanced Screening

To use enhanced (advanced) screening (or halftoning), do the following:

**In Your QuarkXPress Document (Page Setup Dialog Box)**

■ In the Printer Type listbox select

    QMS 4060 Print System

■ If you have EFIcolor software loaded, select None.

■ Select Use PDF Screen Values.

### Standard Screening

To use standard screening (or halftoning), do the following:

**In Your QuarkXPress Document (Page Setup Dialog Box)**

■ In the Printer Type listbox select

    QMS 4060 Print System

- If you have EFIcolor software loaded, select `None`.

- Select `Use PDF Screen Values`.

### Basic Screening

To use basic screening (or halftoning), do the following:

**In Your QuarkXPress Document (Page Setup Dialog Box)**

- In the Printer Type listbox select

  `QMS 4060 Print System`.

- If you have EFI color software loaded, select `None`.

- Set the Halftone Screen (lpi) to the lpi of your choice.

- Disable the option Use PDF Screen Values.

# Memory

Memory allows your printer to store and retrieve information that's required to perform many of its tasks. The memory requirements of each printer are dictated by the applications to be run. Each printer comes standard with a certain amount of memory, but you may add more memory as necessary.

The memory is divided among users (or "clients"), each of which allocated a specific amount (or "block") of memory. Each memory client is dedicated to a specific printing and application purpose. Your QMS 4060 Print System allows you to distribute its memory among the various memory clients where it can best serve your specific printing needs. The following sections provide information on memory management so you can get the most from your printer.

Generally, there are two main reasons for wanting to reconfigure your printer's memory:

- To achieve maximum performance

- To enable additional features

The ability to configure your printer's memory doesn't necessarily mean that you must change your current configuration. If you're presently using all the features you need and the printer is performing efficiently, you shouldn't feel compelled to reconfigure your printer's memory. Just remember that if your printing needs change, not only do you have the ability to increase the amount of printer memory, but you also can redistribute it where you feel it would best meet your printing requirements.

## QMS Memory Management

Managing the memory on your printer is much the same as managing your personal income. In money management, you have a certain amount of income and many ways of spending that income. You decide where that money goes according to what's important to you. There's no single correct way to manage money, but there is one best way for you according to your financial obligations. Just as long as your method works for you.

The same is true for managing the memory on your printer. There's no single correct way for everyone to allocate available printer memory. There is, however, a best way to configure your printer's memory for maximum efficiency in your specific printing environment. For example, if you use a large number of PostScript fonts of various point sizes, you may want to increase the amount of memory allocated to the area specified for PostScript fonts. Or you may want to increase memory to the area that minimizes slowdowns when collating large print jobs.

Memory configuration affects these things as well as the number of jobs that can be accepted by the printer, the number of options available simultaneously, the number of downloadable fonts and emulations that can be stored, and overall printer performance.

## Memory Terms

Before you can configure your printer's memory efficiently, you must first understand the different types of memory and how they work together. Your QMS 4060 Print System documentation uses the following memory terms:

## Memory

Memory allows your printer to store and retrieve information. It's the space within your printer where information is stored while being actively worked on.

## Memory Client

A memory client is a user of a block of memory dedicated to a specific function. Each memory client controls certain features. When insufficient memory is allocated to a specific client, the features it controls may not be accessible.

## Excess Memory

Some printers designate one or two memory clients to receive all the excess, or unassigned memory. On your QMS 4060 Print System excess memory is distributed among all the memory clients.

## Storage

Storage is a device in (or on) which information can be kept. There are three main types of storage—ROM, RAM, and hard disk drives. ROM stores read-only data, RAM represents temporary storage, and hard disk drives hold information on a more permanent basis (see the following definitions).

## ROM (Read Only Memory)

This type of memory contains data and/or machine-executable instructions that can be read but not modified. This information is not lost when the printer's power is turned off.

## RAM (Random Access Memory)

RAM is the memory your printer uses to perform each task. It can be written to and read from. Once a task is complete, the memory is free again to be used for another file. This memory is volatile, so if your printer loses power while a file is being sent, you must resend the file. The number and type of features you can run on your printer simultaneously depend on the amount of RAM you have and how that RAM

---

is distributed. Your printer comes with 32 MB of RAM, but it is upgradable to 128 MB by adding Single In-line Memory Modules (SIMMs).

### RAM Disk

Also called a virtual disk, the RAM disk is an area of RAM that is used to simulate an additional hard disk. Data can be written and read more quickly than on a hard disk, but a RAM disk loses any information stored on it when the printer's power is turned off. The spooling buffer is a RAM disk client if a hard disk is not available.

### SCSI (Small Computer System Interface)

The printer's SCSI port allows you to connect up to three optional SCSI hard disks and the optional CrownCopy scanner, providing storage for fonts, emulations, and other files. Hard disks are also used to increase the amount of collation that can be accepted and provide a secondary storage area for spooled data, while providing virtual memory capabilities.

### IDE (Integrated Drive Electronics)

The standard internal hard disk. "Integrated" refers to the fact that all of the controller electronics are on the drive itself, so no separate adapter card or expansion slot is required.

### Volatile Memory

This type of memory is cleared when the printer is turned off. For example, most RAM is volatile.

### Non-volatile Memory

This type of memory is not lost when the printer loses power.

### NV RAM

This protected form of RAM is used to store information such as your printer's configuration menu. Configuration options you have chosen, such as emulations, memory settings, and input bins, are saved to this non-volatile RAM. This information is not lost when you turn off your printer.

### Physical Memory

Physical memory refers to the amount of RAM installed in the printer.

### Virtual Memory

Virtual memory extends the effective size of the printer's memory by using a disk file or swap file to simulate additional memory space. It enables the hard disk to accept data swapped from RAM to free temporarily the RAM for other tasks.

### Spool

Spooling is temporary storage to hold print jobs until the printer is available to process them.

## Evaluation of Your Printing Environment

The first step in allocating your printer's memory is to define your printing needs. Each of your printer's features requires a minimum amount of memory. If you use a feature, you must allocate enough memory to the client which controls it. On the other hand, if there are features you don't use, you can take the memory in the clients that control the unused features and assign it to other clients that need additional memory.

» **Note:** *With 32 MB standard memory on your QMS 4060, you should have enough memory to support all paper sizes at the highest resolution and duplexed.*

### Evaluation Questions

To get a better idea of what your printing requirements and your printer's capabilities are, answer the following questions. The memory client or menu option associated with each evaluation question is listed in *italics* after the question.

1   How much RAM does your printer have (standard and additional memory)? *Total Memory*

2   Do you have the option of installing additional memory if it's needed? *Total Memory*

3    Does your printer have any internal or external hard disks con-
     nected? If so, how many and what size? *Disk Cache*

4    Which resident emulations will you be running? *PS Heap or Emu-
     lation*

5    Will you be loading any nonresident emulations? If so, how many
     and which ones? *Emulation and Emulation Temp*

6    How many printer ports will be connected? *Host Input and Input
     Buffer*

7    Do you have an optional interface connected? *Input Buffer*

8    How many people will be using this printer simultaneously? *Host
     Input or K Mem for Spool*

9    How many downloadable fonts will you be using? What sizes?
     From which emulation? *Font Cache or Emulation Temp*

10   Will you use many different sizes of fonts/typefaces? *Font Cache*

11   How large are the files you typically print? How large is the largest
     file you'll be printing? *Host Input or K Mem for Spool*

12   Are most of your files text, or are any graphics intensive? *Display
     List*

13   Will you want to download fonts, forms, or operators to memory?
     *Font Cache or Emulation Temp*

14   Will you be collating documents? If so, how large and complex
     will these documents be? *Display List*

15   What media sizes will you be using? *Frame Buffer*

16   At which resolution will you be printing? *Frame Buffer*

17   Will you use CrownCopy? ImageServer? CrownImage? *Frame
     Buffer or Display List*

After you have answered all of these questions, read the following
sections to find out which memory clients control features you plan to
use and which memory clients control features you don't need.

# Memory Clients

Memory clients are users of printer memory that are dedicated to a specific purpose. Each of the memory clients is located in the Administration/Memory menu. When you allocate memory to a specific client through the control panel, it's allocated in kilobytes (KB). Each time you make changes in the Administration/Memory menu, print out a status page to confirm the memory reallocation.

» **Note:** *The value for each memory client must be divisible by 4 KB. Therefore, if a value is entered that is not evenly divisible by 4 KB, it's automatically converted to the next lower value that's divisible by 4 KB. For example, if you enter 102 KB, the actual value is lowered to 100 KB, assuming there is enough memory available to allocate to this client. See the "Memory" section of chapter 4, "Printer Configuration," for each memory client's minimum and default settings.*

Memory clients in the 4060 are automatically allocated when the printer is installed or when you upgrade the printer's memory. There are other occasions when the printer's memory is automatically reallocated.These occur:

- When the printer is installed.

- When new system software is installed.

- When adding or removing hard disks.

- When memory is upgraded.

- When Frame Buffer is manually adjusted.

- When restoring printer defaults.

Remember that if you perform any of these functions the memory clients will be set to default values. The default values depend on the amount of physical memory installed in your printer. The default allocation adjusts the Frame Buffer memory client first. It is set to the minimum values of physical memory needed for your print jobs, that is, paper size, resolution, and duplex printing. The other memory clients are allocated memory from what is left over in physical memory.

## Frame Buffer

The Frame Buffer memory client holds rasterized or bitmapped images of page faces which are ready to be sent to the print engine. A frame holds the contents of each single page image. For example, a 600 dpi page printed on letter size paper would consume frame buffer memory space as follows: (600dpi x 600dpi x 8.5 in x 11 in) /8 = 4,207,500 bytes or 4.1 MB.

Because the frame buffer memory is so critical to the actual printing of a page, its allocation takes precedence over that of other memory clients. The number of frames needed to print at engine speed is engine specific and depends on the size media and resolution. For example, printing at 600x600 dpi requires four times the amount of memory in the frame buffer than does 300x300 dpi.

| Menu | Administration/Memory/K Mem Frame Buffer |
|---|---|
| Choices | 02200-variable depending on options installed |

### Minimum Frame Buffer Size

The following table lists the minimum number of KB that must be devoted to the frame buffer for all media size and resolution combinations.

| Media | Minimum Frame Buffer Size (in KB) | | | |
|---|---|---|---|---|
| | 300dpi simplex | 300dpi duplex | 600dpi simplex | 600dpi duplex |
| Letter/A4 | 2200* | 2200* | 3980 | 7960 |
| Legal | 2200* | 2504 | 4968 | 9936 |
| 11"x17" | 2200* | 3952 | 7852 | 15704 |
| Universal | 2200 | 4400 | 8752 | 17504 |
| A5 | 2200* | 2200* | 2200* | 3912 |
| A3 | 2200* | 4104 | 8164 | 16328 |
| B5 (JIS) | 2200* | 2200* | 2984 | 5968 |
| B4 (JIS) | 2200* | 3056 | 6072 | 12144 |
| B5 (ISO) | 2200* | 2200* | 2984 | 5968 |
| B4 (ISO) | 2200* | 3056 | 6072 | 12144 |

| Media | Minimum Frame Buffer Size (in KB) | | | |
|---|---|---|---|---|
| | 300dpi simplex | 300dpi duplex | 600dpi simplex | 600dpi duplex |
| Statement | 2200* | 2200* | 2200* | 3752 |
| Executive | 2200* | 2200* | 3124 | 6248 |

» **Note:** *2200KB is the minimum allowed for the Frame Buffer client.*

## Display List

Also known as K Mem Display, this client stores compressed representations, or blocks, of the pages to be printed. It takes approximately one compressed block for a normal 8.5" x 11" (215.9 mm x 279.4 mm) text page, four compressed blocks for an 8.5" x 11" (215.9 mm x 279.4 mm) page that includes some graphics, and as many as 500 compressed blocks for an extremely complex page.

Many pages of compressed blocks belonging to multiple print jobs can be stored at the same time in the display list. If enough memory is allocated to this memory client, a page can always be ready to print as soon as another page has been imaged to the print engine.

The amount of memory required for each compressed block is printer specific. The QMS 4060 Print System takes approximately 64 KB of memory from the display list for each compressed block. However, if a page includes raster image data (for example, TIFF or bitmap data), each compressed block will require much more memory.

Increasing the amount of memory in this client may improve printing throughput and minimize slowdowns due to collating or printing complex pages. If your QMS 4060 Print System has a hard drive and the disk swap option is enabled the memory added to this client is taken from virtual memory. If your printer does not have a hard drive then the memory added to this client is taken from the amount of physical memory in your printer. It may be necessary to reduce memory added to another client before adding memory to the Display List. Check that the Frame Buffer still has the minimum amount of memory needed for your printing needs before reallocating this memory.

## PostScript Font Cache

Also known as K Mem PS Fonts and Font Cache, this memory client stores bitmapped representations of previously scaled PostScript fonts. This process reduces the number of times a font must be converted from outline form to bitmap form. Printing pages that have characters already stored in the font cache is immensely faster than printing characters not yet in the font cache.

As the font cache memory fills, the printer makes room for new bitmapped characters by erasing those that have been in the cache longest without being used. By increasing the memory allocated to this client, the printer can store more characters and spend less time erasing and replacing characters in the cache. You should be careful when increasing this client because the printer may spend more time searching the cache than it would scaling the character. This client has a limit to the maximum point size it will store.

Normally, you don't need to change this memory client unless you use a large number of fonts at various point sizes. If you do, you may allocate additional memory to this client to improve printer performance. There's no specific formula to use in figuring the amount of memory required by the font cache, but after a certain point, large font caches cause the printer to take longer to print than smaller font caches because of the search time through the cache. The recommended font cache size is in the following ranges:

- 128-256 KB for 300x300 dpi printing

- 256-512 KB for 600x600 dpi printing

You should experiment to see what font cache size works best for you.

## PS Heap

Also known as K Mem PSHeap, Heap, PostScript VM, and Virtual Memory, this client holds downloaded fonts, PostScript operators, and forms.

Inefficiently coded PostScript jobs can consume an extremely large amount of virtual memory or leave objects in the PostScript heap after

the print jobs are completed, leading to virtual memory errors. If not enough memory is allocated to the PS heap, the job cannot print.

Increasing the memory allocated to this client allows more complex jobs to print and increases the number of fonts that can be downloaded to virtual memory. However, this client should be increased only if you receive a virtual memory error when attempting to print a job or download a font, and even then it should be increased only in small increments until the error message goes away. Excess memory in the PS heap is not used.

## Emulation

Also known as K Mem Emulation, this client is used to store any optional or loadable emulations, such as LN03 Plus or QUIC II. Increasing this client's memory allows you to load more than one optional emulation so that it doesn't have to be reloaded every time the print job is sent.

If an emulation is loaded to process a print job and there is not enough memory in the emulation client, another emulation already loaded may be unloaded automatically to obtain enough memory. If you notice a delay in printing between jobs that have different nonresident emulations, it's possible that the emulations are having to reload each time they're run. Adding to the emulation client may eliminate the unloading and reloading of these emulations and, consequently, increase throughput. If the disk swapping option is turned on then you can increase the emulation memory client using this memory.

Also increase the emulation client if you're printing complex non-PostScript jobs that may require more memory to process correctly.

## Emulation Temporary

Also known as K Mem Emul Tmp and Emulation Temporary, this client sets the amount of system memory to be used by non-PostScript emulations for storing downloaded fonts, forms, and macros. By dedicating a portion of memory to this client, your printer can perform "context switching," the ability to retain downloaded fonts and forms even after the printer changes from one emulation to another. Context

switching prevents unnecessary repetitive downloading and traffic congestion on networks.

Normally, this memory client doesn't need to be changed unless you plan to download many different non-PostScript fonts.

### Spool Buffers

Also known as Host Input and K Mem for Spool, this memory client stores incoming data from all the interfaces until the emulation can process the print job. When enough memory is allocated to this client, the host becomes free more quickly, and the number of jobs that the printer can accept simultaneously is increased. You should consider the amount of data being sent simultaneously when allocating memory to the spool buffer. The internal hard disk can supplement this client with additional memory needed for spooling. See the "Hard Disk Management" section later in this chapter.

» **Note:** *While increasing this client is beneficial in reducing network traffic, throughput is not necessarily increased. In addition, making this client too large could actually decrease throughput because of the overhead involved with managing a large spool.*

### Disk Cache

This memory client stores frequently used data in system memory instead of continually storing and retrieving it from a hard disk. If a lot of disk access is required, adding memory to the disk cache may increase the printer's performance. For example, if many fonts are stored on disk, faster access to these fonts is achieved by increasing the disk cache size. When one or more hard disks are installed and formatted, disk cache is automatically allocated 256 KB.

The disk cache is a high speed temporary buffer for data going to and from the hard disk. It can speed the printer in two ways:

■ Information such as frequently referenced fonts and logos may still be in the cache and may not have to be pulled off a hard disk each time they're needed.

■ Information being written to a hard disk can be held in the cache temporarily until a more convenient time to be written to disk.

The amount of memory needed for the disk cache client is dependent on the size of the disk, the number of disks, the number of subdirectories on each disk, and the amount of memory dedicated to caching. As long as the disk cache is enabled and there is enough memory in the disk cache, all disks are accessible. If insufficient memory is allocated to the disk cache, some disks may be seen while others are not.

The recommended amount of memory for the disk cache client for all disk drives is as follows:

■ 120 KB minimum

■ 0.5 KB per MB of disk storage total for all disks

For example, the recommended amount of memory for the disk cache for a single 120 MB hard disk would be 180 KB, and for two 120 MB hard disks it would be 240 KB.

### MB Printer Mem

This field on the status page shows the size of the physical RAM installed in the printer. When disk swapping is enabled (Administration/Memory/Enable Disk Swap), this field also gives the size of available virtual memory.

### System Memory

Also known as System Use, this non-configurable client is the amount of RAM used to run the printer's operating system. It's never increased or decreased. The system memory subtracted from the total amount of RAM identifies the amount of RAM available for all the other memory clients.

## Hard Disk Management

You can add up to three external SCSI hard disks to your QMS 4060 Print System. These hard disks serve as secondary storage places for such items as downloaded fonts, emulations, and spooled data.

» **Note:** *See FAQ 7181 for a list of approved hard disks, their manufacturers and part numbers, and the QMS products on which they can be used. You can access QMS FAQs through the Internet at http://www.qms.com/support/supportbase/ or through Q-FAX. (See appendix A, "QMS Customer Support," to find out how to access Q-FAX documents).*

*FAQ numbers are subject to change, so yo may want to obtain a directory of Q-FAX documents before requesting a specific document.*

### Virtual Memory Support

Your printer supports virtual memory capabilities for all of the memory clients except Disk Cache and Frame Buffer when disk swapping is enabled (Administration/Memory/Enable Disk Swap menu). These capabilities extend the amount of memory available for certain supported features, such as spooling and collation.

# End Job Mode

When sending print jobs through the serial and parallel protocols, some applications and their printer drivers append an end-of-document command (EOD) to each print job to ensure that each file prints correctly. The reason for this is that some protocols and print queuing systems send print jobs to the printer as one continuous data stream (one print job immediately following another).

But the problem with this system is that some applications are limited by the printer language and are unable to produce an EOD command. This becomes even more problematic when you're printing to a QMS 4060 Print System, where print jobs of all supported emulations can be received simultaneously. ESP technology examines the first part of each print job to determine its emulation. Once the emulation is identified, the print job processes without further checking. This minimizes any slowdown resulting from the sensing process. To help ESP technology determine the proper emulation of successive print jobs, the printer must be able to identify the end of job for each job.

Therefore, unless a wait timeout (the amount of time the printer is waiting on data from the host) occurs and ends each print job, or unless you add an EOD command between each file being printed through these protocols, some print jobs may be interpreted by the printer as one job and may "run" together. See chapter 4, "Printer Configuration," for more information on emulation timeout.

When printing multiple jobs with little or no time delay and with no EOD command between each job, the serial and parallel protocols may be unable to detect an end of job automatically. So the End Job Mode feature on the QMS 4060 printer was designed to allow you to set the end of document for print jobs being sent through these protocols.

## Common Reasons to Use End Job Mode

If you are printing via the serial and parallel protocols, and one of the following conditions exists, you may need to set the end job mode:

- Multiple print jobs with little or no time delay and with no EOD commands have been sent to the printer and the message window displays only one active job.

- Multiple print jobs of the same printer language have been sent to the printer and they print on the same page. (For example, you send the AUTOEXEC.BAT file with no EOD command followed with little or no time delay by the CONFIG.SYS file, and they both print on the same page.)

- Multiple print jobs of different printer languages "run" together as if they are a single print job. (For example, you send a PCL print job followed by a PostScript print job, and the PCL job prints and is followed by what appears to be program code instead of your PostScript print job.)

- You want to print multiple jobs with header pages.

- You want to print multiple jobs where job separation is important.

When your printer is in ESP mode, printing multiple jobs through the serial and parallel protocols and end job mode is not set, ESP technology interprets the emulation for only the first job. The print jobs that

follow are interpreted as being the same emulation as the first job. For example, if there are two print jobs, the first a PCL file with no EOD command, and the second a PostScript file with a Ctrl-D (a PostScript end-of-file character)—ESP technology interprets the emulation of the first job correctly. But since the first print job has no EOD command, it "runs" into the second job, and even though the second job is PostScript, it prints in PCL.

## Using the EOD Commands

Since the serial and parallel protocols may not be able to detect an EOD automatically, due to a lack of an EOD command in some printer languages, you can insert an EOD command at the end of your file to tell the printer where your print job ends. QMS Crown printers recognize two end-of-document commands: QMS EOD and HP EOD.

These commands are functionally the same. They enable data stream sensing for the EOD command, allowing your host computer to control print job separation. The QMS EOD and the HP EOD commands perform an end of document for all of the printer emulations supported on your printer (PostScript, HP-GL, HP PCL, and Lineprinter).

See your system administrator or applications development department to have them identify the standard EOD command for your organization, or to have them select a standard EOD command.

## Setting the End Job Mode for the Serial and Parallel Protocols

Your printer can be connected through the optional serial or standard parallel interface to a stand-alone PC, to a PC print server, or to some other type of print queuing system. This section provides a quick guide to the steps needed to set the end job mode for each environment. The following sections provide more detailed information for each step.

### Stand-Alone PC

**1    Set the end job mode from the printer's control panel.**

**2    Add the EOD command to your file.**

»        **Note:** *If using steps 1 and 2 is not feasible in your stand-alone PC environment, you can alternatively use a program that either causes an emulation timeout or that inserts an EOD command between each print job. See your QMS vendor for more information on this type of program.*

### PC Print Server

**1    Set the end job mode from the printer's control panel.**

**2    Create a job separator to append an EOD command and send it between each print job.**

### Other Print Queuing Systems

If you use a print queuing system other than a PC print server and you experience what appears to be an EOD command problem, you may need to use another procedure, such as a print utility, an initialization sequence, or a header page to add an EOD command. See your print queuing system documentation, your network administrator, or your QMS vendor for more information.

## Setting the End Job Mode via the Control Panel

Use the following procedure to set the end job mode from the printer's control panel for printers connected via the optional serial or parallel interface to a stand-alone PC, a PC print server, or some other type of print queuing system.

»        **Note:** *If you print both serial and parallel protocol jobs, then you must set the end job mode for each protocol.*

Wait for the printer to go idle, and then press the control panel buttons in the order shown in the following instructions to access the End Job Mode option. The printer responds by displaying a status message in the message window.

» **Note:** *You may need to press the Next button one or more times to advance through the list of selections or options.*

| Key | Purpose | Message Window |
|---|---|---|
| Online | Turns off the Online indicator and readies the printer for configuration. | `IDLE` |
| Menu | Accesses the configuration menu. | `CONFIGURATION`<br>`OPERATOR CONTROL` |
| Next | Advances to the Operator Control/Administration menu. | `CONFIGURATION`<br>`ADMINISTRATION` |
| Select | Accesses the Administration menu | `ADMINISTRATION`<br>`COMMUNICATIONS` |
| Next | Advances to the Communications/ Parallel (or Serial) menu. | `COMMUNICATIONS`<br>`PARALLEL(or SERIAL)` |
| Select | Accesses the Parallel (or Serial) menu. | `PARALLEL/SERIAL`<br>`MODE` |
| Next | Advances to the Parallel (or Serial)/End Job Mode menu. | `PARALLEL/SERIAL`<br>`END JOB MODE` |
| Select | Accesses the End Job Mode menu. | `END JOB MODE`<br>*OPTION* |
| Next | Advances to the appropriate option (QMS EOD, HP EOD, or None). | `END JOB MODE`<br>*OPTION* |
| Select | Selects the option. | *OPTION*<br>`IS SELECTED` |
| | Returns to the Parallel (or Serial)/End Job Mode menu. | `PARALLEL/SERIAL`<br>`END JOB MODE` |
| Online | Asks you if you want to save your change. | `SAVE CHANGES?`<br>`NO` |
| Next | Advances to the Yes option. | `SAVE CHANGES?`<br>`YES` |
| Select | Saves your change and idles the printer. | `IDLE` |
| Online | Puts the printer back on line. | `IDLE` |

# Adding an EOD Command to Your File

When adding an EOD command to your file, use the syntax for the selected EOD command exactly as written (the command's syntax is case sensitive).

» **Note:** *<ESC> represents the escape character. (The decimal value for the escape character is 027, and the hexadecimal value is 1B.) How you enter the escape character depends on your application. Some applications allow you to press and hold the ALT key and then type 027 to enter the escape character, while others allow you to type certain character sequences to represent the escape character. See your computer or application documentation to find out how to enter the escape character on your system.*

| For this EOD command... | Use this syntax... |
|---|---|
| QMS EOD | %%EndOfDocument<br><CR><LF> |
| HP EOD | <ESC>%-12345X |

» **Note:** *The <CR><LF> sequence following the %%EndOfDocument line for the QMS EOD is necessary to avoid an INPUT IDLE message remaining in the printer message window after the document finishes printing.*

When the QMS EOD or the HP EOD is set, the printer does not recognize the Ctrl-D EOD command. Add your organization's standard EOD command to the end of your print file, or add it to a separate file as follows.

### Adding an EOD Command to the End of Your File

Create an output file (for example, ASCII, PCL, or PostScript file to disk) and add your organization's standard EOD command (QMS EOD or HP EOD) to the end of that file.

Sample output file:

```
Text
Text
Text
Text
%%EndOfDocument
```

### Adding an EOD Command to a Separate File

Create an ASCII text file that contains only the EOD command. For example, create a DOS batch file listing each print filename followed by the EOD command filename for each file being printed. Then "run" the batch file to print your list of files.

Sample DOS batch file:

| Command | Explanation |
| --- | --- |
| Print mktg.doc | Job filename |
| Print end.txt | EOD command filename |
| Print acct.doc | Job filename |
| Print end.txt | EOD command filename |

## Creating a Network Job Separator

If your printer is connected to a network through a PC and the PC is acting as a print server managing the printing of shared network files, then your system administrator must create a job separator and associate it with a print job queue. Different network environments have different procedures for creating the job separator, such as initialization sequences, custom banner pages, print job headers, or print job trailers. The print server does not necessarily send multiple print jobs to the printer in the order that you queued them to the printer. The network job separator is accessed with each print job, so this ensures that network job separation is enforced. See the *QMS Crown Network Notes* on the *QMS Software Utilities* CD-ROM for more information on how to create a network job separator for several commonly used networks.

# Parallel Interface Modes

In addition to Centronics parallel communication, your printer's paral-
lel interface provides IEEE 1284 bidirectional parallel communication,
which supports five modes of operation. The printer automatically rec-
ognizes and uses the mode dictated by the host.

## Byte Mode

Printer-host communication is done in bytes.The byte mode may be
used by the host device in a DMA (Direct Memory Access) mode for
more efficient operation.

When byte transfer is complete and there is no more data to transmit,
the host may do one of the following:

■ Terminate and return to the compatibility mode.

■ Stay in the Host Busy, Data Not Available phase.

■ Set Host Busy Low, putting the interface into the idle phase.

If there is additional data, the host may do one of the following:

■ Set Host Busy Low, indicating that the host can accept additional
data.

■ Stay in the Host Busy, Data Not Available phase.

■ Terminate and return to the compatibility mode.

Check your host documentation to see if the host is IEEE 1284 com-
patible.

## Compatibility Mode

Printer-host communication is done in a manner that ensures com-
patibility.

### ECP (Enhanced Compatibility Port) Mode

This is an advanced version of byte mode which allows transfer of data in either direction without returning to the compatibility mode. The communication is a half-duplex channel with either device, the host or the printer, making a request for data transfer when there is available data. In the case of simultaneous requests for transfer, the printer always defers to the host.

### EPP (Enhanced Parallel Port) Mode

Printer-host communication is done via asynchronous bidirectional eight-bit transfer. A return to compatibility mode is not required.

### Nibble Mode

Printer-host communication is done in nibbles (four bits; one-half byte) with the low order nibble sent first. A transfer of two nibbles is required for each byte of information.

# PS Protocol Option

Your QMS 4060 Print System supports PS Protocol, a new protocol for communication between the printer and a host computer over the parallel, optional serial, and optional network interfaces. This binary communications protocol (BCP) allows any 8-bit binary value (0-255) to be treated as data, while allowing a few of the values to function as special control characters. When communicating 8-bit binary data in binary or binary fixed mode, the printer uses the quoting mechanism of the binary communications protocol to distinguish between the special control characters and print job binary data.

To differentiate data from the special control characters, any data that is the same as one of the following special control characters must be quoted.

| ASCII Keyboard | ASCII Name | ASCII Hex | Control Function |
|---|---|---|---|
| ^A | SOH | 0x01 | Quote data character |
| ^C | ETX | 0x03 | Abort job and flush to end of |
| ^D | EOT | 0x04 | file |
| ^E | ENQ | 0x05 | End-of-file marker |
| ^Q | DC1 | 0x11 | (Reserved for future use) |
| ^S | DC3 | 0x13 | XON in XON/XOFF flow |
| T | DC4 | 0x14 | control |
| ^\ | FS | 0x1C | XOFF in XON/XOFF flow |
|  |  |  | control |
|  |  |  | Job status request |
|  |  |  | (Reserved for future use) |

A data byte is quoted by replacing it with a two-character sequence. The first character is a ^A (ASCII hex 0x01), and the second character is the character itself XORed with the ASCII value 0x40. For example, to send the value 0x14(^T) as data, send the two-character sequence 0x01 0x54 (^a T) instead. (ASCII "T" is the result of XORing ^T with 0x40).

This method of quoting guarantees that whenever the printer receives any of the eight control characters, the control function is intended regardless of whether the preceding character is a ^A. Any data byte not equal to one of the eight special control characters is transmitted by sending the data byte.

For more information on BCP and quoting, see the *PostScript Language Reference Manual* (Adobe Systems, Inc., Reading, MA: Addison-Wesley, 1990, ISBN 0-201-18127-4), the "Adobe Serial and Parallel Communications Protocols Specification" (in *Adobe Developer Support.* Adobe Systems, Inc., February 14, 1992), and the "PostScript Language Reference Manual" (in *Supplement for Version 2011*, Adobe Systems, Inc., January 24, 1992).

## Options

The following options are available in the PS Protocol menu:

| Menu | Administration/Communications/*Interface*/PS Protocol | |
|---|---|---|
| **Choices** | **Name and Description** | **Interfaces** |
| | Normal—Enables standard, ASCII hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can alter the PS protocol value through PostScript operators. | Parallel, Serial, Ethernet, Token-Ring, LocalTalk |
| | Normal Fixed—Enables standard, ASCII hex protocol. Print jobs cannot alter this value through PostScript operators. | Parallel, serial, Ethernet, Token-Ring, LocalTalk |
| | Binary—Enables binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints). | Parallel, Serial, LocalTalk, Ethernet, Token-Ring |
| | Binary Fixed—Enables binary communications protocol. Print jobs can not alter this value through PostScript operators. Data in the printable ASCII range also prints. | Parallel, Serial, LocalTalk, Ethernet, Token-Ring |
| | QBinary (Quoted Binary)—Enables binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism for the special characters and ^D (EOF). | Ethernet, Token-Ring |

| | Qbinary (Quoted Binary) Fixed—Enables binary communications protocol. Print jobs cannot alter this value through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism for the special characters and ^D (EOF). | Ethernet, Token-Ring |
|---|---|---|
| **Default** | Normal | |
| **Notes** | A data stream sent through the serial or parallel interface using Binary is treated the same as a data stream sent through an optional network interface using QBinary. However, a data stream sent through an optional network interface using QBinary is not treated the same as a data stream sent through the same interface using Binary. | |

## Advantages

The main advantage of using the Binary and Binary Fixed PS protocol modes when sending binary data is that these modes compress the data stream allowing your documents to be smaller so you can send smaller jobs to the printer. For example, some device drivers can format bit map images as binary data instead of as ASCII hex data.

## Implementation

To implement PS protocol for sending binary data on your system you need a device driver available with some applications or operating systems, or you can alternatively use a program to read the data and write out the quoted characters. Contact QMS for any available information on device drivers or binary filter programs.

# HP-GL Color Encoding

The term "pen" in the HP-GL emulation refers to a logical pen (in other words, the current pen position) rather than to a physical pen on a plotter. A pen and a pen color are selected to draw images. This emulation supports 8 pens and pen colors.

Since your QMS 4060 Print System is a monochrome (black and white) printer, the pen colors are converted to shades of gray. The default color mappings for the 8 pens are as follows:

| Pen | Pen Color | Level of Gray |
|-----|-----------|---------------|
| 1 | Black | 100% |
| 2 | Black | 100% |
| 3 | Red | 70% |
| 4 | Green | 41% |
| 5 | Blue | 89% |
| 6 | Violet | 59% |
| 7 | Orange | 25.8% |
| 8 | Brown | 50% |

» **Note:** *The default color for both pen 1 and pen 2 is black. However, the pen width for these two pens is different. Pen 1 is 0.7 mm and pen 2 is 0.3 mm.*

The printer maps each pen to its assigned color, then converts the color to a grayscale using the National Television System Committee (NTSC) standard equation for encoding color. This equation converts a given set of CMYK values to grayscale. For the 8 pen colors assigned to pens 1 - 8, the printer uses the designated grayscale; for any other pen color, the printer uses the following equation:

$$[(C*0.3) + (M*0.59) + (Y*0.11) + K] \div 255$$

» **Note:** *This equation assumes that each grayscale is a byte value that ranges from 0 to 255 (100%). If the sum of the left-side (calculation in brackets) of the NTSC equation is greater than 255, then the sum is set equal to 255.*

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# A

## QMS Customer Support

## In This Chapter . . .

- "Sources of Support" on page A-2
- "QMS World-wide Offices" on page A-5

# Sources of Support

Several sources of help and information are available, depending on the type of help you need:

## Your QMS Vendor

Your local vendor (the one from whom you bought the printer) may be best equipped to help you. Your vendor has specially trained service technicians available to answer questions, and the equipment to analyze your printer problems.

## Your Application Vendor

Often, "printing" problems have more to do with the application being used than with the printer. In this case, the application manufacturer is the best source of help.

## Q-FAX

Q-FAX, a QMS information retrieval service, provides application notes, technical support notes on common printing problems, and information about printer specifications, options, accessories, consumables, and prices.

In the United States and Canada, call (800) 633-7213 to reach Q-FAX. In all other countries, call (334) 633-3850. Have your fax number handy when you call (or place the call from your fax machine's handset).

You can choose to have either a directory (a list of currently available documents) or a specific document sent to you. The first time you call, request the directory (press 2 on your phone or fax keypad when prompted). Then call back to request specific documents. You can order up to three documents per call.

## CompuServe

Through CompuServe, you ask general (non-technical) questions, share information with other users, and access printing information and programs. When you use CompuServe, type `go qmsprint↵` to go directly to the forum where QMS is located. The QMS library section contains application notes, printer drivers, utilities, technical information, and announcement files.

## Internet

The QMS server provides access to technical reports, new product announcements, a trade show schedule, and other general information about QMS.

If you have access to the World Wide Web, you can view the QMS home page at http://www.qms.com/. The QMS ftp resource is ftp.qms.com.

## QMS Customer Response Center (CRC)

You can contact the QMS Customer Response Center (CRC) in three different ways:

■ **Telephone**—You can call the CRC at (334) 633-4500 (US) Monday–Friday, 7:00 am–6:00 pm, Central Time.

» **Note:** *If you call for assistance, have the following information ready so our technicians can help you more quickly:*

  ☑ Your phone number, fax number, and shipping address

  ☑ A description of the problem

  ☑ The printer model

  ☑ The type of host computer you're using

  ☑ The type and version of operating system you're using

  ☑ The interface you're using, and, if serial, the protocol (for example, XON/XOFF)

  ☑ The application and version you're using

&#9745;  The emulation you're using

&#9745;  Your printer firmware version (listed on the status/start-up pages)

■ **Fax**—You can fax questions to the CRC at (334) 633-3716 (US). Provide the same information as listed above, and indicate whether you would like a faxed or a phoned reply.

■ **Internet**—If you have access to the World Wide Web, you can access the CRC through the QMS home page at http://www.qms.com/

# QMS World-wide Offices

## QMS United States and Latin America

**General Contact**
1 (334) 633-4300
Fax 1 (334) 633-4866
Email info@qms.com
Internet http://www.qms.com
Information on QMS products, supplies, and accessories, and on the
authorized QMS remarketer or service provider nearest you
1 (800) 523-2696

**Customer Response Center (CRC)**
Technical Assistance
1 (334) 633-4500                    7:00 am–6:00 pm Central Time
Fax 1 (334) 633-3716
Internet http://www.qms.com

**Latin America Fax**
1 (334) 639-3347

**National Service**
Service Information, Installation, and Maintenance Pricing
1 (800) 762-8894
On-Site Service and Depot Repair Information
1 (800) 858-1597                    7:00 am–7:00 pm Central Time
Spare Parts Ordering and Information
1 (334) 633-4300 x2530        8:00 am–5:00 pm Central Time

## QMS Canada

**General Contact**
1 (514) 333-5940
Fax 1 (514) 333-5949
Supplies and Accessories                    1 (800) 268-0343 x223

**National Service**
On-Site Service and Depot Repair Information
1 (800) 268-4969                    8:30 am–7:00 pm Eastern Time
Spare Parts Ordering and Information
1 (905) 206-9234 x238            8:30 am–5:00 pm Eastern Time

## QMS in Japan

**General Contact**
(+81)-3 3779-9600
Fax (+81)-3 3779-9650
Internet http://www.qmsj.co.jp

## QMS in Latin America

**General Contact**
Cra 43 DD#8-42
Officina 201
Medellin, Colombia
(+57) (4) 312 13 70
Fax (+57) (4) 268 92 97

## QMS EMEA

| | |
|---|---|
| **QMS Australia** | Anitech<br>Sydney Business & Tech. Centre<br>52/2 Railway Parade<br>2141 Lidcombe NSW<br>Australia<br>(+61) 2–9901 3235<br>Fax (+61) 2–9901 3273 |
| **QMS Benelux**<br><br>**Belgium, Nether-<br>lands, and all<br>unlisted countries** | Planetenbaan 60 'Corner Plaza'<br>3606 AK Maarssen<br>The Netherlands<br>(+31) 346–551333<br>Fax (+31) 346–550170<br>Internet http://www.qms.nl |
| **QMS France** | Vélizy Plus<br>1 Bis, Rue du Petit Clamart<br>78142 Vélizy Cedex<br>France<br>(+33) 1–410 79 393<br>Fax (+33) 1–408 30 110 |
| **QMS GmbH**<br><br>**Germany and<br>Austria** | Gustav Heinemann Ring 212<br>D-81739 Munich<br>Germany<br>(+49) 89 63 02 67 0<br>Fax (+49) 89 63 02 67 67 |

| QMS Italy | Via della Repubblica 56<br>43100 Parma<br>Italy<br>(+39) 52–1231 998<br>Fax (+39) 52–1232 902 |
|---|---|
| QMS Nordic<br><br>Sweden, Finland, Norway, and Denmark | Arenavägen 41, 6th floor<br>121 77 Johanneshov<br>Sweden<br>(+46) 8–600 01 30<br>Fax (+46) 8–600 01 33 |
| QMS South Africa | Saskay House<br>Unit 24 Sunninghill Business Park<br>Peltier Road, Sunninghill, Johannesburg<br>Republic of South Africa<br>(+27) 11–807 6957<br>Fax (+27) 11–807 6960 |
| QMS UK<br><br>United Kingdom and Ireland | Old Bridge House, The Hythe<br>Staines, Middlesex TW18 3JF<br>United Kingdom<br>(+44) 1784–442255<br>Fax (+44) 1784–461641 |

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# B

## Technical Specifications

## In This Chapter . . .

# Print Engine Specifications

| Engine | Fujitsu Super Gamma 40 |
|---|---|
| Duty Cycle | Maximum - 300,000 images per month |
| Printing Technology | Laser diode, electro-photographic |
| Paper Size | Letter, Legal, Statement, 11"x17", Executive, A3, A4, A5, B4, B5, B4 (JIS), B5 (JIS), B4 (ISO), B5 (ISO) |
| Paper Type | Plain paper, labels, recycle paper, transparencies, bond paper, pre-punched paper |
| Paper Input Capacity | 3 trays x 500 sheets (64 g/m$^2$) standard or custom |
| | 3000 sheets (A4, Letter size only) optional Large-Capacity Input Feeder (LCIF) |
| Paper Output Capacity | 500 sheets (64 g/m$^2$) face down tray |
| | 2000 sheets optional Large-Capacity Output Stacker (LCOS) |
| Resolution | 300x300 dpi 600x600 dpi |
| Warm-Up Time | Less than 150 seconds |

## Print Speed

| Paper Size | Simplex | Duplex |
|---|---|---|
| Letter | 40 | 40 |
| Legal | 25 | 25 |
| 11"x17" | 21 | 15 |
| Executive | 40 | 40 |
| A3 | 21 | 15 |
| A4 | 40 | 40 |
| A5R | 40 | 40 |
| B4R (JIS) | 24 | 24 |

| Paper Size | Simplex | Duplex |
|---|---|---|
| B5 (JIS) | 34 | 34 |
| Custom (width = 3.93" to 11.69"/ 100mm to 297mm, length = 7.16" to 8.5"/ 182mm to 215.9mm) | 40 | 40 |
| Custom (width = 3.93" to 11.69"/ 100mm to 297mm, length = 8.5" to 17"/ 215.9mm to 431.8mm) | 21 | 15 |
| Custom (width = 3.93" to 11.69"/ 100mm to 297mm, length = 8.5" to 11.69"/215.9mm to 297mm) | 30 | 30 |
| Notes:<br>1. Unit of measure: Images Per Minute (IPM)<br>2. In simplex and duplex modes, all the speeds have a ±5% tolerance.<br>3. JIS - Japan Industrial Standards | | |

## Physical Specifications

| Item | Specification | | |
|---|---|---|---|
| Dimensions | Width | Depth | Height |
| | 22.5"(570mm | 24.8"(630mm) | 40.6"(1030mm) |
| Weight | Main Unit - Approximately 287 lbs (130 kg)<br>LCIF - 44 lbs (20 kg)<br>LCOS - 90.5 lbs (41 kg) | | |

| Item | Specification | | | |
|------|------|------|------|------|
| Service Area | Front | Back | Left | Right |
| | 25.6"(650mm) | 33.5"(850mm) | 33.5"(850 mm) | 33.5"(850 mm) |

## Electrical Specifications

| Item | | Specifications |
|------|------|------|
| Input Power | Voltage | 120 to 127 VAC ± 10%, 12A 200 TO 240 VAC ± 10%, 7A |
| | Phase | Single-phase |
| | Frequency | 50/60 Hz +2%,-4% |
| Power Consumption | | 1300 VA or less than during operating |
| Heat Production | | 894 kcal per hour |

## Environmental Specifications

| Item | Specification | |
|------|------|------|
| Ambient Conditions | Operating | Non-operating |
| Temperature | 50° - 95° F/10° - 35°C | 32° - 95° F/0° - 35°C |
| Humidity | 20% -80% no condensation | 20% -80% no condensation |
| Maximum and wetbulb temperature | 84° F/ 29° C (no condensation) | |
| Temperature and humidity gradients | 27° F/15° C per hour or less and 30% RH per day or less (no condensation) | |

| Item | Specification |
|------|---------------|
| Acoustic noise | 55 dB(A) or less - printer only<br>57 dB(A) or less - printer with LCOS & LCIF<br>50 dB(A) or less - standby |
| Dust | 0.15 mg./m3 (stearic acid) |
| Ozone emission | 0.1 PPM or less |
| Tilt | Up to maximum of 5° from level |

# Controller Specifications

| Emulations | PostScript Level 2 (300/600 dpi) |
|---|---|
| | HP PCL 5e (HP LaserJet 4Si compatible, without PJL; 300/600 dpi)) |
| | HP-GL 7475A/7550A/Draftmaster (300/600 dpi) Lineprinter (300/600 dpi) |
| | Support for optional downloadable emulations |
| Fonts | 42 resident PostScript fonts, including OCR B that can be scaled from 4 points upward and rotated to any angle in 1° increments; all typefaces have multilingual character sets |
| | 1 resident bitmap HP PCLe font in 25 symbol sets, 35 resident scalable HP PCL5e fonts in up to 32 symbol sets, 1 resident scalable HP PCL5e font in 1 symbol set, and 5 resident scalable HP PCL5e fonts, all of which can automatically be rotated to landscape orientation |
| | 40 resident HP-GL symbol sets |
| | Support for Type 1 and Type 3 host-resident downloadable PostScript fonts |
| | Support for Type 42 (PostScript format) host-resident downloadable TrueType fonts |
| | Support for Truetype fonts in PCL |

| Interfaces | Centronics/IEEE 1284 bidirectional parallel and CrownNet Ethernet interfaces |
| --- | --- |
| | Support for an optional interface (LocalTalk, Ethernet, Token-Ring, DECnet, or Serial) |
| | SCSI interface, supporting up to 3 external hard disks and one optional CrownCopy (scanner) |
| Memory | 32 MB RAM (60 ns) standard, upgradable to 128 MB |
| | SIMM connector for up to 16 MB optional fonts |
| System Software | Softloadable; stored on internal hard disk |
| Type | NEC 4300 processor operating at 133 MHz |

# Print Media

| Delivery | **Face down output tray** |
| --- | --- |
| | 500 sheets of 20 lb (75 g/m$^2$) paper |
| | **Output stacker** |
| | 2000 sheets of 20 lb (75 g/m$^2$) paper |
| | 3000 sheets of 20 lb (75 g/m$^2$) paper |
| Feed | **3 standard input paper trays** |
| | About 500 sheets each of 20 lb (75 g/m$^2$) paper, for a total of 1500 sheets |
| | **Large-capacity input feeder (LCIF)** |
| | 3000 sheets of 20 lb (80 g/m$^2$) paper |
| Loading | Automatic from input paper trays, custom tray, or large-capacity input feeder |
| Sizes | (See the following table) |

| Types | Cut-sheet paper, transparencies, 3-hole punched paper, preprinted forms, and labels. See "Consumable Supplies" on page B-10, for recommended media. |
|---|---|
| Weight | Plain, Bond, or Recycled Paper: 17-36 lb (64-139 g/m$^2$) <br> Labels: 31-36 lb (120-139 g/m$^2$) |

## Print Media SIzes

| Media | Media Size | | Imageable Area | | Feed | Input/ |
|---|---|---|---|---|---|---|
| | Inches | Millimeters | Inches | Millimeters | Edge | Output |
| 11x17 | 11.00x17.00 | 279.4x431.8 | 10.67x16.67 | 270.93x423.38 | Short | D, L, M, P, U |
| A3<br>A4<br>A5 | 11.69x16.54<br>11.69x8.27<br>5.85x8.27 | 297.0x420.0<br>297.0x210.0<br>148x210.0 | 11.35x16.20<br>7.93x11.35<br>5.48x7.94 | 288.21x411.48<br>201.51x288.21<br>139.12x201.55 | Short<br>Long<br>Short | D, L, M, P, U<br>D, F, L, M, U<br>P D, D, L, M,<br>U, P |
| B4 (JIS)<br>B5 (JIS) | 10.12x14.33<br>7.17x10.12 | 257.0x364.0<br>182.0x257.0 | 9.77x13.998<br>6.87x9.78 | 248.24x355.56<br>173.40x248.50 | Short<br>Short | D, L, M, P, U<br>D, L, M, P, U |
| B4 (ISO)<br>B5 (ISO) | 9.84x13.90<br>6.93x9.84 | 250x353<br>176x250 | 9.50x13.57<br>6.59x9.51 | 241.47x344.55<br>167.30x241.55 | Short<br>Short | C, D, P<br>C, D, P |
| Executive | 7.25x10.50 | 184.20x266.70 | 6.92x10.20 | 175.73x259.13 | Short | D, M, P |
| Legal<br>Letter | 8.5x14.0<br>11.00x8.5 | 215.9x355.6<br>279.40x215.90 | 8.16x13.67<br>8.17x10.67 | 207.26x347.18<br>207.48x270.93 | Short<br>Long | D, L, M, P, U<br>D, F, L, M, P,<br>U |
| Statement | 5.50x8.50 | 139.7x215.9 | 5.16x8.17 | 131.06x207.48 | Short | C, D. P |
| *D=Duplexer, F=Large-Capacity Input Feeder, L=Lower tray, M=Middle tray, U=Upper tray,<br> P=Large-Capacity Output Stacker, C=Custom tray | | | | | | |

# Consumable Supplies

| Trays | Three 500-sheet paper trays | |
|---|---|---|
| Media —Sizes | See "Print Media SIzes" on page B-9, for media size information. | |
| Media—Recommended Brands | **Paper** | **Plain**—Xerox 4024 |
| | | **Laser**—Hammermill Laser Print |
| | **Labels** | Avery 5160 Adhesive label stock should have pressure-sensitive (peel-and-stick) adhesive backing and should be 17-34 lb (64 -128 g/m$^2$). The label backing must be able to withstand heat generated by the fixing assembly (190° C/374° F). Use only label sizes letter or A4. |
| | **Transparen-cies** | 3M CG3300 Use only transparency sizes letter or A4. Transparencies must be able to withstand the heat generated by the fuser (190° C/ 374° F), without transformation. |
| **Paper Storage** | **Sealed in cartons** <br><br> **In unsealed cartons** | Recommended storage temperature and humidity are 32°-95°F/0°-35°C and 20%-80% RH. The recommended storage temperature and humidity for paper in opened cartons are 59°-77°F/ 15°-25°C and 40%-50% RH. |
| **Consumable Storage** | **Temperature** | -4° to 122° F (-20° to 50° C) |
| | **Temperature Change** | 27° F (15° C)/hour or less |
| | **Humidity** | 10% to 90% RH |
| | **Storage** | 18 months |

# Regulatory

| | | |
|---|---|---|
| **CE Marking** | International (EU)<br>  EN 55022:1987<br>  (Class AITE)<br>  EN 60950:1992<br>  IEC 801-2<br>  IEC 801-3<br>  IEC 801-4 | Emissions<br>Safety<br>ESD<br>Radiated susceptibility<br>Fast transcients |
| **Electromagnetic Compatibility (EMC)** | International (EU)<br>  IEC 801-2<br>  IEC 801-3<br>  IEC 801-4 | ESD<br>Radiated susceptibility<br>Fast transcients |
| **Electromagnetic Emissions (EMI)** | DOC (Canada)<br>  Canadian CRC c1374<br><br>EU (International)<br>  EN 55022:1987<br><br>FCC (USA)<br>  Title 47 CFR Ch. 1, Part 15<br><br>VCCI (Japan)<br>  VCCI V-3Class 1 ITE | Class A digital device<br><br><br>Class A ITE<br><br><br>Class A digital device<br><br><br>Class 1 ITE |
| **Energy Star (USA)** | Energy Star compliant<br>  (base model only) | |
| **Product Safety** | cUL (Canada)<br>EU (International)<br>UL (USA) | CAN/CSA C22.2 No. 950-M90<br>EN 60950:1992<br>UL 1950, second edition |
| **Product Laser Safety** | CDRH (USA)      EU<br>(International) | Title 21 CFR Ch. I,<br>Subchapter J<br>IEC 825 |

# PC Cable Pinouts

## Centronics/IEEE 1284 Parallel

This table gives the pinouts for the printer end of the Centronics/IEEE 1284 parallel cable used to connect your printer to a computer.

| Signal Pin No. | Signal Description | Direction |
|---|---|---|
| 1 | Strobe- | In |
| 2 | Data 1 | InOut |
| 3 | Data 2 | InOut |
| 4 | Data 3 | InOut |
| 5 | Data 4 | InOut |
| 6 | Data 5 | InOut |
| 7 | Data 6 | InOut |
| 8 | Data 7 | InOut |
| 9 | Data 8 | InOut |
| 10 | Acnlg- | Out |
| 11 | Busy+ | Out |
| 12 | Pe+ | Out |
| 13 | Select | Out |
| 14 | Autofeed | In |
| 15 | Reserved | - |
| 16 | Ground | - |
| 17 | Ground | - |
| 18 | Vcc Test | - |
| 19-30 | Ground | - |
| 31 | Iprime | In |
| 32 | Fault- | Out |
| 33 | Reserved | - |
| 34 | Reserved | - |
| 35 | Reserved | - |
| 36 | Selectin | In |

## Notes to the Table
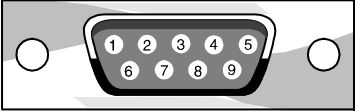
- ■ **Direction** refers to the direction of signal flow as viewed from the printer.

- ■ **Return** denotes "twisted-pair return" and is to be connected at signal-ground level. When wiring the interface, be sure to use a twisted-pair cable for each signal and never fail to complete connection on the return side. To prevent noise effectively, these cables should be shielded and connected to the chassis of the system unit and printer, respectively.

- ■ All interface conditions are based on Transistor-Transistor Logic (TTL) level. Both the rise and fall times of each signal must be less than 0.2 microseconds.

- ■ Data transfer must be carried out by recognizing the ACKNLG or BUSY signal.

- ■ The cable must have an overall braided shield, Belden 8345 or equivalent.

- ■ Connectors must have shielded housings. The overall shield must be bonded to the shielded housings at both ends of the cable.

# Serial

This table gives the correct pinouts for the 9-pin male RS-232 serial interface.

» **Note:** *The serial interface is an option which must be purchased through your QMS vendor. See appendix A, "QMS Customer Support," for a list of locations and telephone numbers.*

| Pin | Name | Pinout View from Printer Interface |
|-----|------|-----------------------------------|
| 1 | Not Used | |
| 2 | Receive Data (RXD) | |
| 3 | Transmit Data (TXD) | |
| 4 | Data Terminal Ready (DTR) | |
| 5 | Signal Ground (GND) | |
| 6 | Data Set Ready (DSR) | |
| 7 | Ready To Send (RTS) | |
| 8 | Clear To Send (CTS) | |
| 9 | Reserved | |

## IBM PC/XT, PC/AT, and Compatible Computers

The following diagrams show the serial **cable** pinouts for IBM PC/XT, PC/AT, and compatible computers.

» **Note:** *Not all serial cables are configured as shown and may require an additional null-modem adapter. Check with your cable vendor for compatibility.*

| To Printer 9-Pin | | | To CPU XT 25-Pin Female | | To Printer 9-Pin | | | To CPU AT 9-Pin Female | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | Not Used | | | | 1 | Not Used | | |
| RXD | 2 | | 2 | RXD | RXD | 2 | | 2 | RXD |
| TXD | 3 | | 3 | TXD | TXD | 3 | | 3 | TXD |
| DTR | 4 | | 20 | DTR | DTR | 4 | | 4 | DTR |
| DSR | 6 | | 6 | DSR | DSR | 6 | | 6 | DSR |
| GND | 5 | | 7 | GND | GND | 5 | | 5 | GND |
| RTS | 7 | | 4 | RTS | RTS | 7 | | 7 | RTS |
| CTS | 8 | | 5 | CTS | CTS | 8 | | 8 | CTS |
| | 9 | Not Used | | | | 9 | Not Used | | |

» **Note:** *To download printer system software via the serial port, your hardware must have RTS and CTS support. Make sure that pins 4 and 5 on the 25-pin serial cable and pins 7 and 8 on the 9-pin serial cable are criss-crossed as shown in this diagram.*

## LocalTalk (Optional Interface)

The following table provides the pinouts for the printer's optional 8-pin LocalTalk interface:

| Pin | Name | Pinout View from Printer Interface |
|-----|------|-----------------------------------|
| 1,2,7 | Reserved | |
| 3 | Transmit Data - (TXD) | |
| 4 | Signal Ground (GND) | |
| 5 | Receive Data - (RXD) | |
| 6 | Transmit Data + (TXD) | |
| 8 | Receive Data + (RXD) | |

## Macintosh to Serial

The following table provides the pinouts for a cable connecting the Macintosh printer or modem port to the printer's serial port:

» **Note:** *To download printer system software from a Macintosh, you must have this type cable. Make sure pins 4 and 5 are crisscrossed as shown in this diagram.*
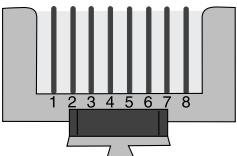
| To Macintosh DIN-8 Male | | | | To Printer DB-9 Female |
|-------------------------|---|----------|---|------------------------|
| HandshakeOut | 1 | | 7 | RTS |
| HandshakeIn | 2 | | 8 | CTS |
| TXD- | 3 | | 3 | TXD |
| RXD- | 5 | | 2 | RXD |
| GND,RXD+ | 4,8* | | 5 | GND |
| | 6 | Not Used | | |
| | 7 | Not Used | | |

* Pins 4 and 8 must be connected together on the DIN-8 cable.

# Ethernet
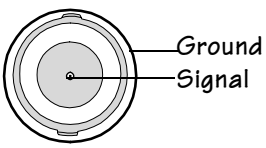
## 10BaseT RJ45

The following table provides the pinouts for the 10BaseT RJ45 Ethernet interface:

| Pin | Name | Pinout View from Printer Interface |
|-----|------|-----|
| 1 | Transmit Data + | |
| 2 | Transmit Data - | |
| 3 | Receive Data + | |
| 4 | No Contact | |
| 5 | No Contact | |
| 6 | Receive Data - | |
| 7 | No Contact | |
| 8 | No Contact | |

## 10Base2 BNC

The following table provides the pinouts for the 10Base2 BNC Ethernet interface:

| Pin | Name | Pinout view from Printer Interface |
|-----|------|-----|
| 1 | Ground | |
| 2 | Signal | |

# Printer Options

| | |
|---|---|
| **Cables** | You may purchase cables from your local vendor. See cable specifications, earlier in this chapter. |
| **CrownCopy** | Monochrome scanner/copier with automatic document feed (ADF) capability; connects to the external SCSI port via a SCSI 2 to Centronics 50 cable. |
| **Emulations** | Loadable disk format (requires optional hard disk and additional memory): LN03 Plus (300 dpi only; 15 typefaces) QMS QUIC II (300 dpi only) XES CGM QFORM ImageServer II |
| **Fonts** | Kanji SIMM with 2 Morisawa fonts Kanji external hard disk with 5 Kanji fonts MICR fonts Check with QMS, for a complete list of optional fonts. See appendix A,"QMS Customer Support," for a list of locations and telephone numbers. |
| **Forms Printing** | QMS QFORM, printer-resident forms printing enabler |
| **Hard Disks— External SCSI** | *See FAQ 7181 for a list of approved hard disks, their manufacturers and part numbers, and the QMS products on which they can be used. You can access QMS FAQs through the Internet at http://www.qms.com/support/supportbase/ or through Q-FAX. (See appendix A, "QMS Customer Support," to find out how to access Q-FAX documents).* <br><br> *FAQ numbers are subject to change, so yo may want to obtain a directory of Q-FAX documents before requesting a specific document.* |

| Image Printing | QMS ImageServer |
|---|---|
| **Interfaces** | CrownNet Ethernet (EtherTalk, LAN Manager/Lan Server, NetWare, TCP/IP)<br>CrownNet Token-Ring (LAN Manager/Lan Server, NetWare, TCP/IP)<br>DECnet<br>LocalTalk<br>Serial RS232<br>Check with your QMS vendor, for a complete list of optional interfaces. See appendix A, "QMS Customer Support," for a list of locations and telephone numbers. |
| **Media Input** | 3000-sheet input paper deck (LCIF) |
| **Media Output** | 2000-sheet output stacker (LCOS)<br>3000-sheet output stacker (LCOS) |
| **Security** | Security key |
| **SIMMs** | Kanji SIMM<br>Memory<br>8, 16, and 32 MB sizes; *See FAQ 7181 for a list of approved hard disks, their manufacturers and part numbers, and the QMS products on which they can be used. You can access QMS FAQs through the Internet at http://www.qms.com/support/ supportbase/ or through Q-FAX. (See appendix A, "QMS Customer Support," to find out how to access Q-FAX documents).*<br><br>*FAQ numbers are subject to change, so yo may want to obtain a directory of Q-FAX documents before requesting a specific document.* |
| **Storage** | Internal IDE hard disk<br>External SCSI hard disks (up to 3) |
| **Warning Device** | QMS BuzzBox Lite light/buzzer printer warning device |

# Warranty Considerations

Various factors can affect a printer's warranty. Two important ones are consumables and electrostatic discharge. Read your printer warranty carefully, and then store it in a safe place.

» **Note:** *Don't return any merchandise to the manufacturer without calling for a return merchandise authorization (RMA) number. See appendix A, "QMS Customer Support," for the QMS Customer Response Center (CRC) telephone number where you can obtain an RMA number.*

## Consumables and Your Warranty

The use of non-QMS consumables and/or accessories alone does not affect either your warranty or any maintenance contract you may have purchased. However, if QMS printer failure or damage is found to be directly attributable to the use of non-QMS consumables and/or accessories, QMS will not repair the printer free of charge. In this case, standard time and material charges will be applied to service your printer for that particular failure or damage. QMS recommends that you use only QMS consumables and accessories to support your printer. For Information on QMS products, supplies, and accessories, and on the authorized QMS remarketer or service provider nearest you, in the US, call 1 (800) 523-2696. In all other countries, check appendix A, "QMS Customer Support," for the QMS office closest to you.

## Electrostatic Discharge and Your Warranty

It's very important to protect the printer controller board and other printer circuit boards from electrostatic damage.

**If an anti-static wrist strap is provided** in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground. The bare metal chassis of equipment, such as on the back of a computer, is suitable if it is plugged in but **turned off**. **Never attach the wrist strap to any piece of equipment with an electrical current present.** Turn off all power switches first. Plastic,

rubber, wood, painted metal surfaces, and telephones are not accept-able grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.

**If you don't have an anti-static wrist strap**, discharge your body's static electric charge by touching a grounded surface before you han-dle any printer boards or components and before removing the con-troller board cover. If you must walk around before completing your task, discharge your body's static electric charge again before touch-ing the printer controller board.

Incidental and consequential damages caused by not discharging electrostatic buildup can affect your printer warranty.

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# C

## Document Option Commands

## In This Chapter . . .

- "Supported QMS DOCs" on page C-2

# Introduction

This appendix lists the supported Document Option Commands (DOCs) for your QMS 4060 Print System. The commands are grouped by feature type.

Each command is preceded by either a DOC statement (%%) or an IncludeFeature statement (%%IncludeFeature). See the *QMS Crown Document Option Commands* manual for information on how to use each command.

# Supported QMS DOCs

## Header/Trailer Page Commands

| | |
|---|---|
| Print copyright statement | %%CopyRight: |
| Print document creator | %%Creator: |
| Print creation date and time | %%CreationDate: |
| Print current date | %%Date: |
| Print document owner | %%For: |
| Print document host | %%Host: |
| Print routing information | %%Routing: |
| Print document title | %%Title: |
| Print version and revision | %%Version: |
| Print header page | %%IncludeFeature: header |
| Print trailer page | %%IncludeFeature: trailer |

## HP-GL Emulation Commands

| | |
|---|---|
| Select enhanced resolution | %%IncludeFeature: enhanced |
| Expand plot | %%IncludeFeature: expand |
| Select original paper size | %%IncludeFeature: size |
| Select pen width and color | %%IncludeFeature: pen |
| Select plotter | %%IncludeFeature: plotter |
| Scale the image | %%IncludeFeature: scaling |

# HP PCL 5e Emulation Commands

| | |
|---|---|
| Enable scalable fonts | %%IncludeFeature: scalablefonts |
| Install object | %%IncludeFeature: install |
| Remove object | %%IncludeFeature: remove |
| Remove resource | %%IncludeFeature: removeresource |
| Select default font | %%IncludeFeature: font |
| Select default font ID | %%IncludeFeature: fontid |
| Select symbol set | %%IncludeFeature: symbolset |
| Set carriage return to CR+LF | %%IncludeFeature: criscrlf |
| Set linefeed to CR+LF | %%IncludeFeature: lfiscrlf |
| Set number of lines per inch | %%IncludeFeature: linesperinch |
| Set point size | %%IncludeFeature: pointsize |
| Resource | %%IncludeFeature: resource |

# Lineprinter Emulation Commands

| | |
|---|---|
| Select font for current job | %%IncludeFeature: font |
| Set point size for current job | %%IncludeFeature: pointsize |
| Specify character map type | %%IncludeFeature: map |
| Number lines | %%IncludeFeature: number |
| Set tabs | %%IncludeFeature: tabs |
| Set linefeed to CR+LF | %%IncludeFeature: lfiscrlf |
| Set carriage return to CR+LF | %%IncludeFeature: criscrlf |
| Set formfeed to CR+FF | %%IncludeFeature: ffiscrff |
| Wrap lines | %%IncludeFeature: autowrap |
| Set number of lines per page | %%IncludeFeature: linesperpage |
| Set margins | %%IncludeFeature: lpmargins |
| Set orientation | %%IncludeFeature: lporientation |

# CCITT Groups 3 and 4 Commands

| | |
|---|---|
| Start decompression | %%ImageData |
| Set encoded byte flag | %%EBAMode |
| Set end of block | %%BlockEnd |
| Set line end | %%LineEnd |
| Eject page | %%PageEnd |
| Set image position | %%ImagePosition |
| Invert image | %%InvertImage |

---

**Document Option Commands**                                            **C-3**

| | |
|---|---|
| Set dpi for image expansion | %%DPI |
| Set data compression | %%Compression |
| Reverse bits | %%BitReverse |
| End print job | %%JobEnd |
| Set image size | %%ImageSize |
| Set image rotation | %%Rotation |

## Document Formatting

| | |
|---|---|
| Logical page orientation | %%IncludeFeature: pageorientation |
| Duplex print jobs | %%IncludeFeature: duplex |
| Number up printing | %%IncludeFeature: pagegrid |
| Offset logical page | %%IncludeFeature: pageoffsets |
| Print borders | %%IncludeFeature: border |
| Scale logical page | %%IncludeFeature: pagescaling |
| Booklet printing | %%IncludeFeature: booklet |
| Print background images | %%IncludeFeature: background |
| Set printer resolution | %%IncludeFeature: resolution |
| Print page range | %%IncludeFeature: pagerange |
| Collate print job | %%IncludeFeature: collate |
| Logical page size | %%IncludeFeature: pagesize |
| Select number of copies | %%IncludeFeature: numcopies |
| Select paper | %%IncludeFeature: input |
| Select output bins | %%IncludeFeature: output |
| Select orientation | %%IncludeFeature: orientation |
| Select emulation | %%IncludeFeature: emulation |
| Logical margins | %%IncludeFeature: margins |
| Select print mode | %%IncludeFeature: quality |

## Sessions Command

| | |
|---|---|
| New layout command | %%IncludeFeature: newlayout |

## LN03 Commands

| | |
|---|---|
| Identify product | %%IncludeFeature: product |
| Control line wrap | %%IncludeFeature: autowrap |
| Specify default paper size | %%IncludeFeature: paper_size |

| | |
|---|---|
| Control transformation point | %%IncludeFeature:<br>    paper_size_override |
| Adjust image horizontally | %%IncludeFeature: xorigin |
| Adjust image vertically | %%IncludeFeature: yorigin |
| Set power-up configuration | %%IncludeFeature: reset_override |

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# D

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# Notices

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## In This Chapter . . .

# Manual Notice

QMS, Inc. reserves the right to make changes to this manual and to the equipment described herein without notice. Considerable effort has been made to ensure that this manual is free of inaccuracies and omissions. **However, QMS, Inc. makes no warranty of any kind including, but not limited to, any implied warranties of merchantability and fitness for a particular purpose with regard to this manual**. QMS, Inc. assumes no responsibility for, or liability for, errors contained in this manual or for incidental, special, or consequential damages arising out of the furnishing of this manual, or the use of this manual in operating the equipment, or in connection with the performance of the equipment when so operated.

# FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

» **Note:** *A shielded cable is required to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules.*

▲ **Caution:** *Any modifications or changes to this product not expressly approved in writing by the manufacturer responsible for compliance to Federal Regulations could void the user's authority to operate this product within the Laws and Regulations of the Federal Communications Commission.*

✎ **WARNING!** *To prevent electrical shock, do not remove any covers from your printer unless you are experienced in working with circuit boards and are following instructions for procedures described in QMS documentation.*

**ACHTUNG!** *Um elektrische Kurtzschlüsse zu vermeiden, entfernen Sie keine Gehaüseteile von Ihrem Drucker, wenn Sie keine Erfahrungen im Umgang mit elektrischen Bauteilen haben. Befolgen Sie die in der QMS Dokumentation beschriebenen Hinweise.*

# Canadian Users Notice

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme á la norme NMB-003 du Canada.

# Europe RFI Statement

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

# Acoustics

Acoustic noise levels per ISO 9296:

Printing:

$L_{pAm}$:   56 dB (bystander)

$L_{WAd}$:   7.0 B

Standby:

$L_{pAm}$:   39 dB (bystander)

$L_{WAd}$:   5.4 B

Geraeuschemission nach ISO 9296:

Druckend:

$L_{pAm}$:   56 dB (nachbararbeitsplatz)

$L_{WAd}$:   7.0 B

Betriebs-bereit:

$L_{pAm}$:   47 dB (nachbararbeitsplatz)

$L_{WAd}$:   5.4 B

# Data Communications (United Kingdom only)

Pursuant to Section 22 of Telecommunications Act of 1984, this product is approved for indirect connection to Public Telecommunications systems within the United Kingdom under the General Approval number NS/G/1234/J/100003.

# Safety Standards and General Considerations

This printer has been designed to conform to recognized technical standards, including the following national and international product safety standards and norms:

- UL 1950

- U.S. CDRH 21CFR Ch. 1 Subch J

- EN 60950 (IEC 950)

- EN 60825 (IEC 825)

- CSA C22.2 No. 950-95, Third Edition

Any unauthorized removal of safety covers, manipulation of safety switches, and interference with the safety system is strictly prohibited. Such actions can cause personal injury and can damage the system. Also make sure that the operating and maintenance areas are not obstructed in any way.

# Laser Safety

This printer is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation.

Since radiation emitted inside the printer is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

# Power Cord

The following power cord requirements are in effect for the 220v QMS 4060 Product.

**Minimum**    0.75 mm$^2$

**Minimum**    H05 VV - F

> »   **Note:** *The male plug is certified in the country in which the equipment is to be installed, and the female plug is an IEC 320 connector.*

# Colophon

This manual was written and formatted in FrameMaker. Some illustrations were created in Adobe Illustrator and translated to WMF format in Transverter Pro; other illustrations were created directly in FrameMaker. The menu configuration tree was produced using Microsoft PowerPoint. Typefaces chosen are Benguiat, Courier, Helvetica, MarkerFelt, and Tekton. The manual was printed in camera-ready form on a QMS printer.

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# E

## Configuration Menu

## In This Chapter . . .

- "Installation Menu" on page E-3
- "Operator Control Menu" on page E-4
- "Administration Menu" on page E-5

# Introduction

You may use this section as a quick reference for understanding and navigating the menu structure of the QMS 4060 Print System.The following menu charts are provided in this section:

■ Installation Menu

   Shows the configurations available when the security key is used to access the Installation Menu.

■ Operator Control Menu

   Shows the operator printer configurations.

■ Administration Menu

   Shows the printer adminstration configurations.

## Menu Chart Conventions

The following conventions are used in the menu charts:

■ Some menu selections are marked with an asterisk (*). These selections will only appear on your print system if the specified option is installed.

■ These menu charts show only the top-level menus. See chapter 4, "Printer Configuration,"  for detailed information on a menu selections's options.

# Installation Menu

```
                              ┌─────────────────┐
                              │      Idle       │
                              └─────────────────┘
        ┌──────────────────────────┼──────────────────────────┐
┌─────────────────┐     ┌─────────────────┐        ┌─────────────────┐
│  Installation*  │     │ Operator Control│        │  Administration │
└─────────────────┘     └─────────────────┘        └─────────────────┘
        │
┌─────────────────┐     ┌─────────────────┐
│ Operator Passwrd│─────│ (Enter          │
└─────────────────┘     │  password)      │
        │               └─────────────────┘
┌─────────────────┐     ┌─────────────────┐
│ Use Operator PWD│─────│   Off or On     │
└─────────────────┘     └─────────────────┘
        │
┌─────────────────┐     ┌─────────────────┐
│  Admin Password │─────│ (Enter          │
└─────────────────┘     │  password)      │
        │               └─────────────────┘
┌─────────────────┐     ┌─────────────────┐
│  Use Admin PWD  │─────│   Off or On     │
└─────────────────┘     └─────────────────┘
```
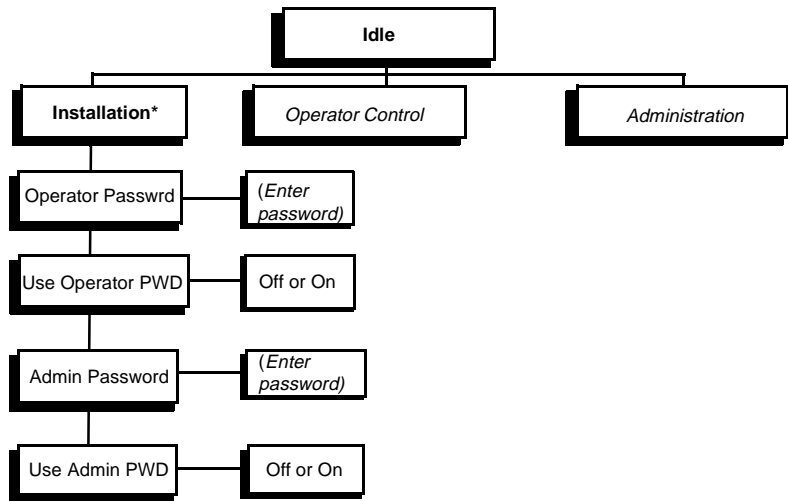
*Optional

# Operator Control Menu

| Idle |
| --- |

**Operator Control** | *Administration* | *Installation**

Copies — 001-999

Duplex — Off, On, or Tumble

Offset Stacking* — Off or On

Face-Up Order — Normal or Reverse

Collation — Off or On

Orientation — Portrait or Landscape

Inputbin — Upper, Middle, Lower or Optional*

Outputbin — Upper, Face-Up Stack* or Face-Down Stack*

Chain Inputbins — On, Off, or On Any

| Letter | B4 |
| Legal | B5 |
| Executive | Statement |
| 11x17 | B4(ISO) |
| A3 | B5(ISO) |
| A4 | |
| A5 | |

Custom Input Bin — Upper, Middle, Lower

Chain Option — On or Off — Upper, Middle, Lower or Optional

Accounting — Mode Disk Space Resetaccounting or File Segment

Consumables — Print Statistics

*Optional

# Administration Menu

**Idle**

| Administration | *Configuration* | *Installation\** |

**Communications**
- Timeouts
- Serial*
- Parallel
- Network1*
- Network2

**Emulations**
- ESP Default
- PostScript
- PCL 5E
- HP-GL
- LinePrinter
- TIFF*
- CALS*
- CGM*
- LN03+*
- QUIC*

**Special Pages**
- Calibration Page
- Header Page
- Header Inputbin
- Trailer Page
- Trailer Inputbin
- Status Page Type

**Startup Options**
- Do Start Page
- Do Sys Start
- Do Error Handler

**Memory**
- Manual Config

**Engine**
- Image Alignment
- Default Paper
- Inputbin 1 Name
- Inputbin 2 Name
- Inputbin 3 Name
- Inputbin 5 Name
- Outputbin 1 Name
- Outputbin 2 Name
- Outputbin 3 Name
- Page Recovery
- Toner Low Act.
- Energy Saver
- Toner Density
- Rotate SImplex
- Letterhead
- Def. Resolution
- Print Quality

**Consumables**
- Developer
- Drum Unit
- Fuser Unit
- Pick Unit 1
- Pick Unit 2
- Pick Unit 3
- LCIF Pick Unit*
- Start Period

**Miscellaneous**
- Save Defaults
- Restore Defaults
- Reboot System
- New System Image
- Capture Printjob
- Keypad Language
- Clock Operations

**Disk Operations**
- Format Disk
- Backup Hard Disk
- Restore Disk

❖

\*Optional

# Index

# B

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# C

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# S

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